Malaguti
IDEE IN MOTO

A

FRAME AND RUNNING GEAR

CNK 50 DRAKON

WORKSHOP MANUAL

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INTRODUCTION

- **This Workshop Manual** describes the main electrical/mechanical checks, the essential checks and the assembly of components supplied disassembled in order to deliver a brand new vehicle (the sequence of operations is not binding).
- **It is essential** to follow the instructions with great care. Work carried out carelessly or, worse still, work that has not been accomplished, can cause injuries and damage or, in the less serious cases, complaints.

NOTE ***These manuals provide the necessary information and instructions for routine maintenance and servicing.***

Some information has been given to us by the engine manufacturers. We therefore decline all responsibility for any error, omission or misrepresentation.

MALAGUTI reserves the right to make any changes and modifications hereto it deems necessary without prior notice.

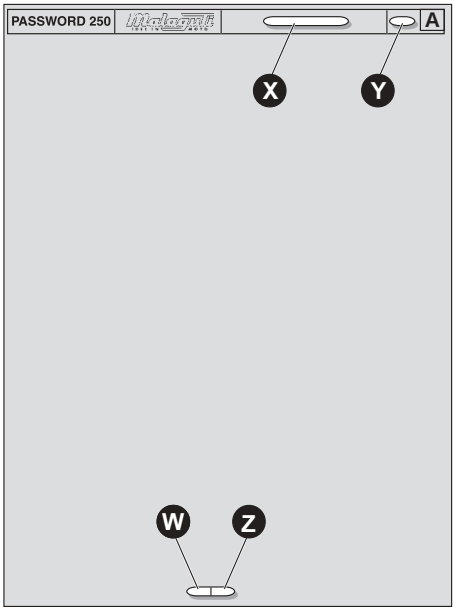
MANUAL UPDATES

- The updates will be sent by us (in a reasonable time). Every CD-Rom you receive will supersede the one already in your possession.
- **The table of contents** will be duly updated in the event that new pages are inserted, which render the consultation of the manual difficult.
- **IMPORTANT!** The Workshop Manuals are to be considered as **essential tools** to be properly kept up-to-date so as to maintain their validity over time.

NOTES FOR EASY CONSULTATION

CONFIGURATION OF THE PAGES

Y	Chapter
X	Section title
W	Page N°
Z	Date of issue



MODIFIED PAGES

- Pages that have been modified will bear the same number as the same page of the previous edition, followed by a letter **M** and, in the relative box, the **new date** of issue**.**

ADDITIONAL PAGES

- Any additional pages shall bear the last number of the section to which they belong, followed by the letter **A** and the **new edition date**.

SYMBOLS

- Symbols are provided **for quick and easy reference** (see the relevant heading), identifying situations requiring utmost attention or providing practical suggestions or simple information.

- **These symbols** may appear **next to a text** (in which case they refer solely to the text itself), **next to a figure** (in which case they refer to the topic illustrated in the figure and to the relative text), or **at the top of the page** (in which case they refer to all the topics dealt with in the page).

NOTE ***The meaning of the symbols should be duly memorised as their scope is to avoid having to repeat basic technical concepts or safety recommendations. They are therefore to be considered as "memory tags". In case of any doubt as to their meaning, consult the page in which they are fully described.***

ABBREVIATIONS

F	Figure
Cs	Tightening torque
P	Page
Pr	Paragraph
S	Section
Sc	Diagram
T	Table
V	Screw

UNITS OF MEASUREMENT

All the dimensions in this Manual are shown in **mm**.

NOTE ***The letter V in the illustrations refers to fixing or adjusting screws. The number following this letter refers to the number of the same type of screw in the unit or component described and illustrated. A letter without a number indicates quantity 1. In case of different screws being referred to in the illustration, the letter V is followed by a number and a lower case letter. Example: (V4a).***

Unless otherwise specified, units and components are reassembled by proceeding in the reverse order of removal.

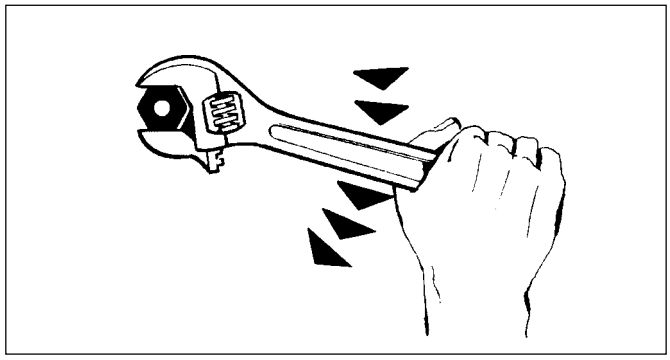
GENERAL WORK PROCEDURES

- The **advice, recommendations** and **warnings** given hereafter are aimed at ensuring maximum work safety as well as at considerably reducing the risk of accidents, personal injury, equipment damage and idle times. We therefore recommend observing such advice, recommendations and warnings scrupulously.

SUGGESTIONS

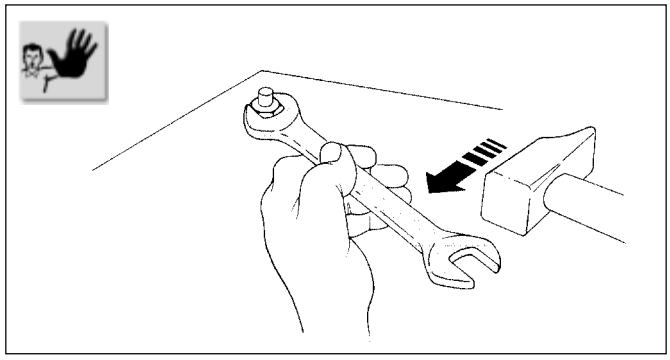
- Only use top quality tools and equipment.
- Only use equipment conforming to EU Directives for lifting the vehicle.
- During all operations keep tools close at hand, ideally in accordance with a predetermined sequence of use, and anyway never leave tools on the vehicle or in concealed or hard to reach positions.
- Always keep the work area clean and tidy.
- When tightening screws or nuts, start with the **larger diameter** or inner fasteners, and tighten them in a "**crosswise pattern**" in successive "**torquing steps**".
- Preferably use open-end wrenches and tighten by exerting "**pulling force**" rather than "pushing force".

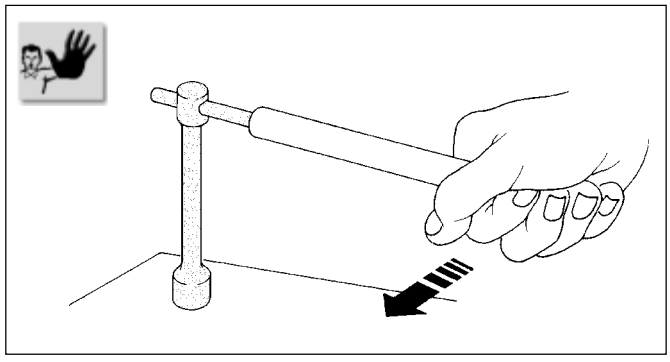
- Adjustable wrenches should only be used in case of emergency, i.e. when a properly sized wrench is not available. During the torquing stage the movable jaw tends to open thus risking damaging the screw head or achieving unreliable tightening torque values. In any case, when using an adjustable wrench, take care to proceed as shown in the figure.
- Except in the case of occasional services, prepare a **work sheet** for the customer, on which to take a note of all the work performed and write memos relating to any future checks that may be required.



RECOMMENDATIONS

- **Before carrying** out any work on the vehicle wait for all the parts **to cool down completely.**
- For operations requiring two mechanics, make sure that the various steps to be performed by each of them are clearly defined and coordinated beforehand.
- Make sure that each component has been properly fitted before proceeding with the next one.
- Lubricate all parts (where applicable) before reinstalling them.
- Gaskets, oil seals, snap rings and cotters **must be renewed** at every refitting.
- The torque settings specified in the manuals refer to the "**final torque**", which must be reached progressively by steps.
- Loosen and tighten aluminium alloy parts (covers) only after **the engine has cooled down fully**.
- Only use screwdrivers of suitable sizes in relation to the screws to be loosened or tightened.
- Work in a comfortable position and ensure that the vehicle is stable.
- Never use a screwdriver as a lever or chisel.





- Never use pliers to loosen or tighten screws or nuts because, in addition to not providing a sufficient clamping force, they may also damage the screw head or nut hex.
- **Never tap wrenches with a hammer** (or other similar tools) to loosen or tighten screws and nuts.
- **Never attempt to increase leverage** by attaching tubes, etc. to wrenches.

Never use open flames for any reason.

Never leave open containers or containers not suitable for holding fuel in passageways, close to heat sources. etc.

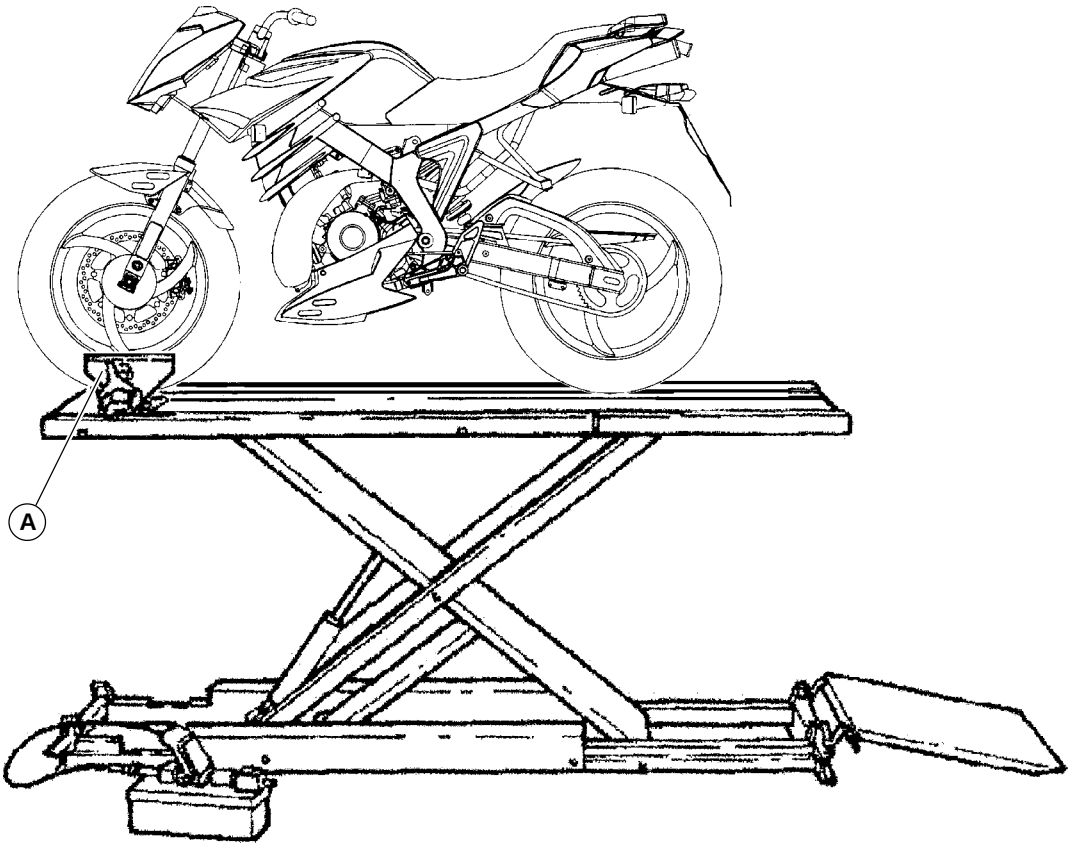
Never use petrol to clean the vehicle or the workshop floor. Always use low flash point solvents to clean the vehicle components.

Never suck from or blow into the fuel pipe.

When welding, make sure that there are no flammable liquids in the vicinity. Always remove the fuel tank, even if completely empty, and disconnect the negative cable (-) from the battery.

Never leave the engine running in closed or poorly ventilated areas.

Before any servicing, make sure that the vehicle is perfectly stable.
The front wheel should preferably be anchored to fixture (A), which is integral with the lift platform.



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OPERATING SYMBOLS

IMPORTANT!

CAUTION! - Descriptions concerning operations that are potentially hazardous for the maintenance mechanic or repairman, other workshop personnel or extraneous persons, for the environment, for the vehicle, and for the tools and equipment.

DISCONNECT POWER - Before performing the work described, disconnect the battery negative cable.

RISK OF FIRE - Indicates operations that may constitute a fire hazard**.**

EXPLOSION HAZARD - Indicates operations that may constitute a risk of explosion.

TOXIC FUMES - Indicates the risk of intoxication or inflammation of the respiratory tract.

NO! - Operations to be absolutely avoided.

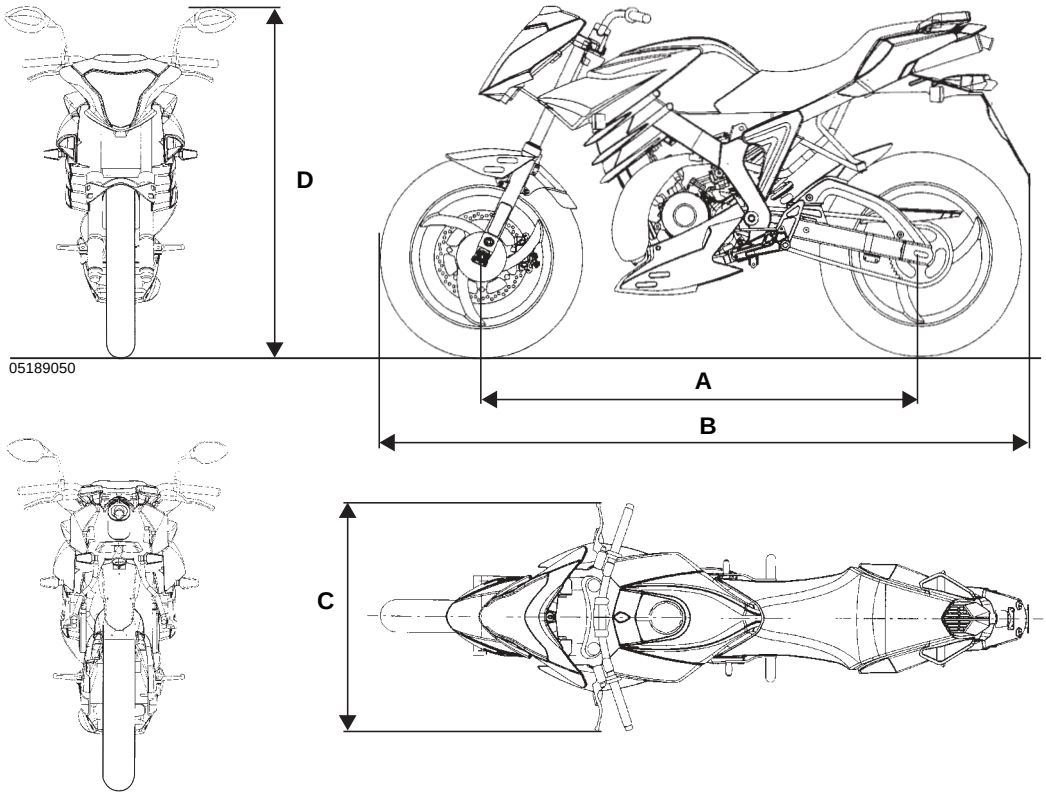
SYMMETRICAL OPERATIONS - Operations to repeat on both sides of the unit or component in question.

ENGINE WORKSHOP MANUAL - Information that can be found in the engine workshop manual.

FITTING AND ASSEMBLY OPERATIONS

REMOVAL AND DISASSEMBLY OPERATIONS

TECHNICAL DATA



DIMENSIONS

Length (**B**)	1970
Width (**C**)	755
Height (**D**)	1050
Wheel base (**A**)	1325 ± 20

WEIGHT

During operation, kg	118
Maximum load, kg	160

(Total weight of rider, passenger, cargo and accessories)

ENGINE

Type	2-stroke, liquid-cooled
Cylinder arrangement	Forward-inclined single-cylinder
Displacement	49 cm^3
Bore x stroke	40.3 x 39 mm
Compression ratio	12:1 ± 0.5
Starting system	Electric
Lubrication system	Separate

TYPE OF OIL

Engined oil	Oil for 2-stroke engines (JASO FC or ISO-LEGD)
Tank capacity	10 l.
Reserve	0.3 l.
Transmission oil	SAE 10W40
Engine capacity	0.82 l.

FUEL

Type	Regular unleaded petrol 95 RON
Tank capacity	9.5 l.
Reserve	1.8 l.

CARBURETTOR

Type	PHBN16 / DELL'ORTO

SPARK PLUG

Type	NGK BR9ES
Gap in mm	0.6 ÷ 0.7

CLUTCH

Type	Mechanical

TRANSMISSION

Primary reduction system	Helical gear
Primary reduction ratio	71 / 20 (3.55)
Secondary reduction system	Mechanical chain drive
Secondary reduction ratio	48 / 11 (4.36)
Transmission type	6-speed
Type	Left foot operation
Gear ratio	**1** 12/36 1:3
	2 16/33 1:2.06
	3 19/29 1:1.52
	4 22/27 1:1.23
	5 24/25 1:1.04
	6 25/24 1:0.96

FRAME AND RUNNING GEAR

Frame	Welded steel tubular structure
Angle	28°

TYRES

Type	Tubeless
Front	100/80-17 52S
Rear	130/70-17 62S

BRAKES

Disk brake with hydraulic transmission

Front	Right hand operation
Rear	Right foot pedal control

SUSPENSION

Front	Hydraulic fork, stems Ø 36 mm
Max. stroke	88 ± 2 mm
Rear	Swing arm with shock absorber
Max. stroke	28 ± 2 mm

ELECTRICAL EQUIPMENT

Ignition system	C. D. I.
Charging system, rated power	FLYWHEEL MAGNET, 95W
Battery	Maintenance-free
Battery capacity	12V, 5 Ah

LIGHT BULBS

Headlight	12V 35/35W
Tail-light	13.5V 0.36 W / 2.7 W
Indicators front/rear	12V 10W x 4
Indicator lights	LED
Parking light	12V 3W (Switzerland version only)
Low beam indicator light	12V 1,2W (Switzerland version only)
Number plate light	12V 5W (Switzerland version only)

LUBRICANT TABLE

LUBRICANTS	TYPE OF LUBRICANT
ENGINE OIL	**Q8 CLASS 10W 40**
MIX OIL	**Q8 CITY BIKE ULTRA** **Q8 DAILY SUPER**
LUBRICANT FOR CHAINS	**Q8 CHAIN LUBE**
OIL FOR AIR FILTERS	**Q8 AIR FILTER OIL**
RADIATOR FLUID	**Q8 TOP FLUID**
BRAKE FLUID	**Q8 BRAKE FLUID DOT 4**

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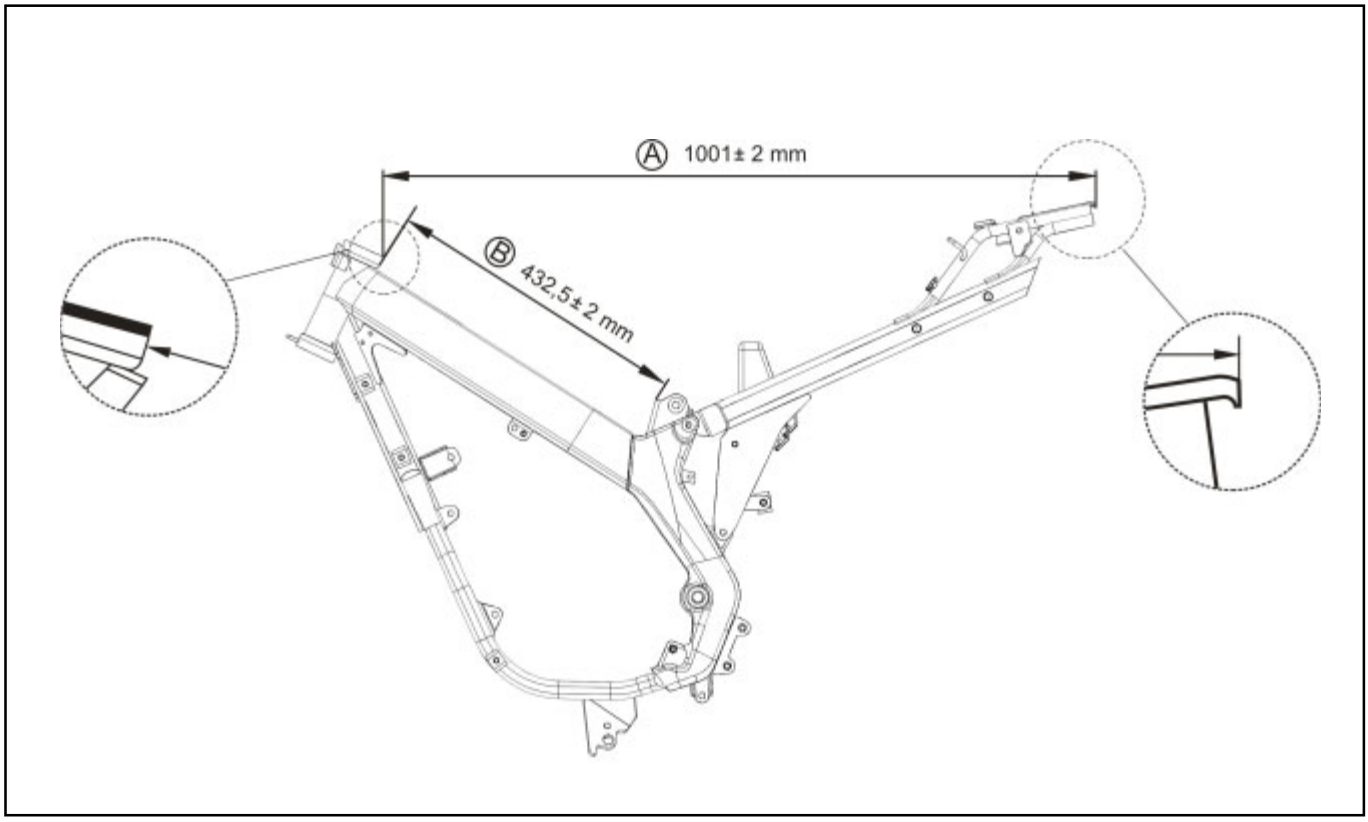
DIMENSIONAL CHECK OF FRAME

If the scooter has been involved in an accident and you suspect even slight distortion of the frame it is essential to perform the dimensional checking procedure before any further “repair or set-up” work.

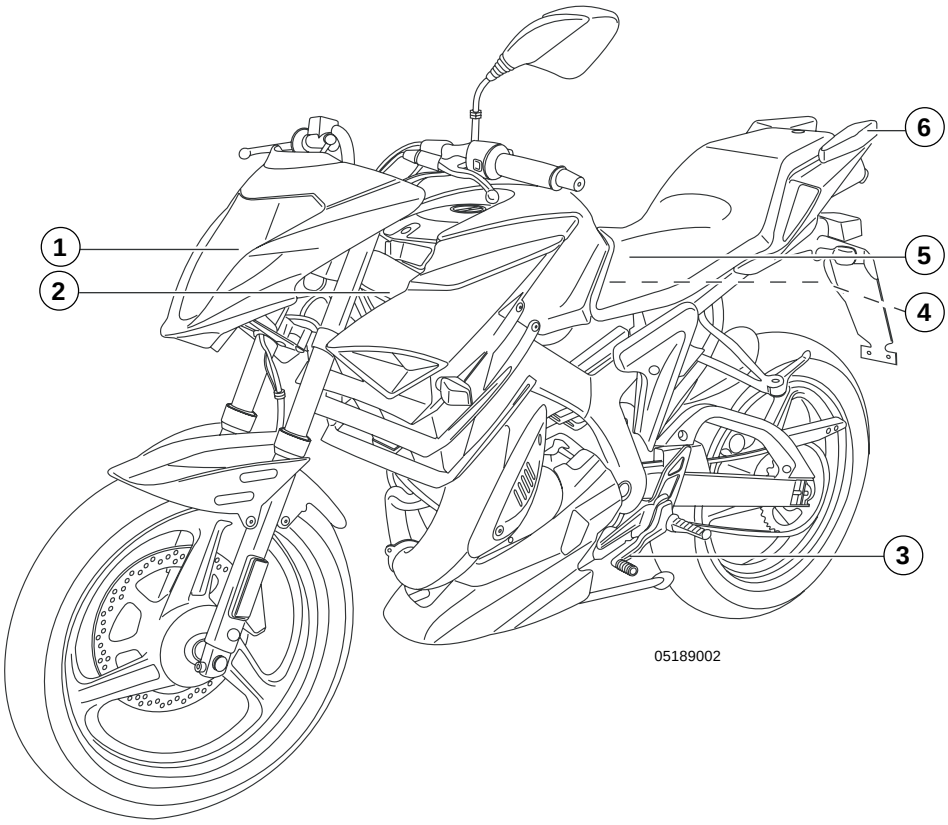
Control dimension (**A**) must be **1001 mm** with a tolerance of **± 2 mm**.
Control dimension (**B**) must be **432,5 mm** with a tolerance of **± 2 mm**.

Do not attempt to bend the frame to restore the original “A” measurement.



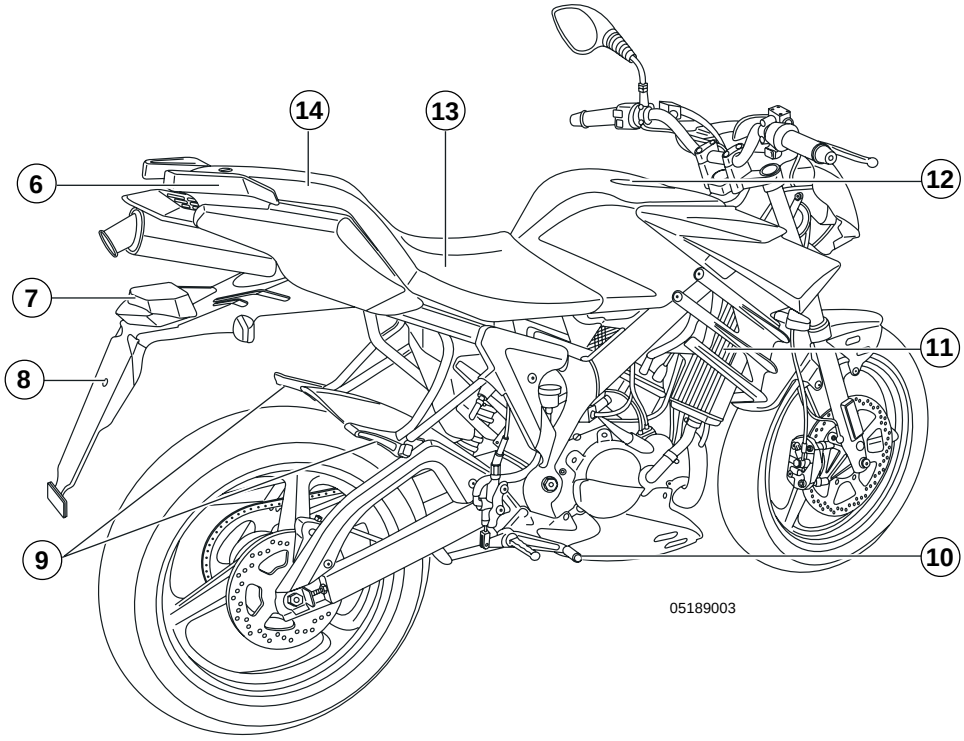
LEFT VIEW

1) Headlight
2) Oil tank
3) Shift pedal
4) Air filter
5) Battery
6) Passenger holder



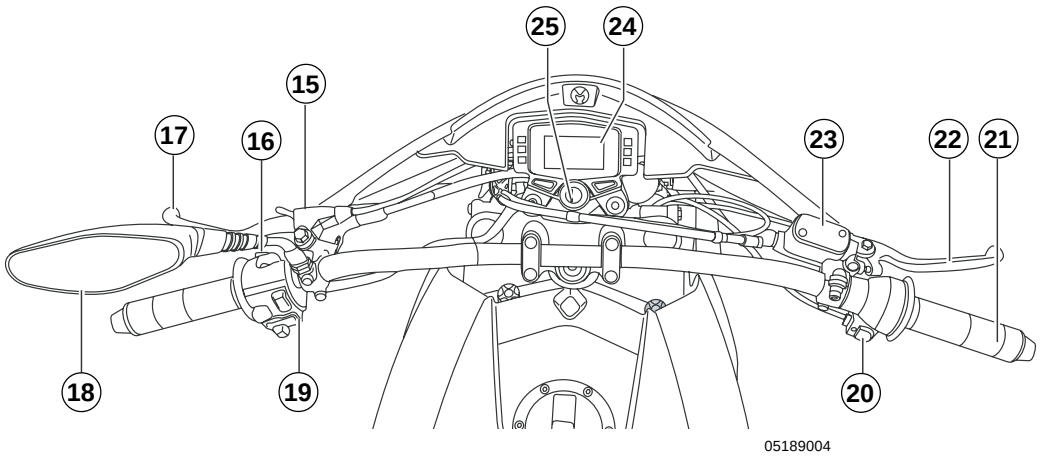
RIGHT VIEW

6) Passenger holder
7) Tail light
8) Number plate light + number plate holder (SWITZERLAND only)
9) Passenger footrests
10) Rear brake pedal
11) Radiator
12) Fuel tank cap
13) Fuse
14) Owner's tool bag

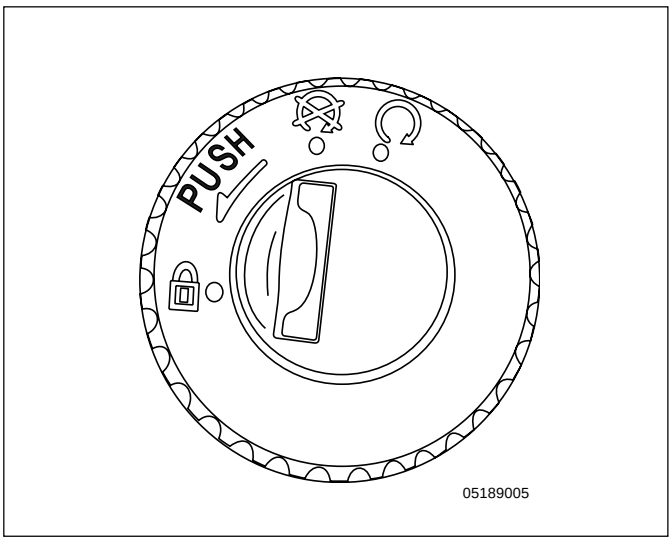


CONTROLS / INSTRUMENTS

15) Manual starter lever
16) **MODE** switch
17) Clutch lever
18) Rear-view mirror
19) Left handlebar switches
20) Starter button
21) Throttle grip
22) Front brake lever
23) Front brake pump
24) Multifunction digital instrument panel
25) Main switch



MAIN SWITCH



The main switch controls the ignition circuit and steering lock.

: all electrical contacts are **disconnected**.

: the contacts are **activated**; the engine can start and the lights come on.

the steering lock is **on**.

KEYS

The scooter is provided with two keys making it possible to:

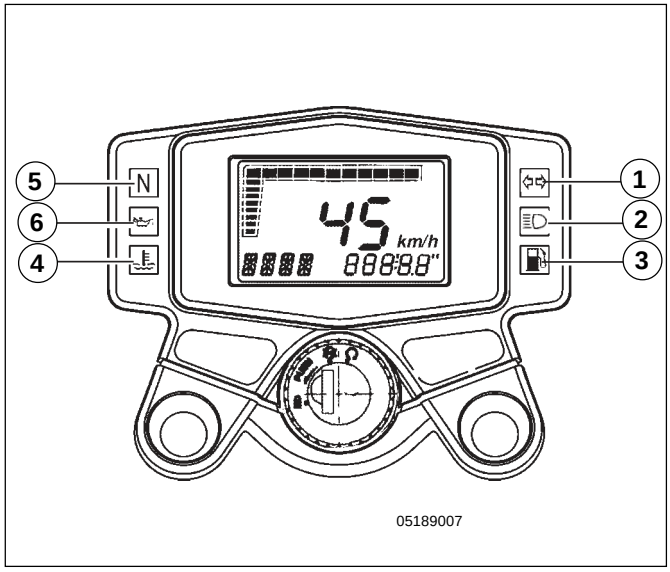
- Providing the ignition contact.
- Turning the lights on.
- Locking the steering system.

HANDLEBAR LOCK

Locking: turn the handlebar all the way to the right or left, push the key in and turn it counter-clockwise.

Disengaging: turn the key clockwise.

INDICATOR LIGHTS



1) Turn signal indicator light

This light flashes when the turn indicator is pushed to the left or right.

2) Low beam indicator light

This indicator comes on when the low beam headlight is operated.

3) Fuel level warning light

This light comes on when the fuel level is low. **Fill the fuel tank.**

4) Coolant temperature warning light

This light comes on when the temperature of the coolant is too high.

When this light comes on, stop the engine at once and follow the instructions on page 24.

5) Neutral indicator light "N"

This light comes on when the transmission is in neutral position.

DIGITAL INSTRUMENT PANEL

This new digital instrument board offers several additional functions- compared to traditional ones - through which driver may optimally manage his/her vehicle. The panel is equipped with a warning light signalling shortage of coolant or improper connection with the radiator's thermostat. This light comes on automatically. To select the functions shown on the display, press the **MODE** button located at the front of the left hand control (see page 18).

Available functions are:

0-40 (acceleration from 0 to 40 km/h),

TIME (clock),

LAP (chronometer),

AVE (average speed),

TD (partial distance),

TOD (total distance),

BAR GRAPH with three functions: battery charge level, coolant temperature, number of engine revolutions.

For the English version, the display will be in miles, not km. The digital instrument board only works if the battery is connected. If the battery is flat, replace it immediately. When the battery is replaced or the fuse is removed, power is disconnected; any settings memorised on the instrument panel, except the total distance travelled, will be reset.

Replace the flat battery with a new one; if the problem remains, call an Authorised MALAGUTI Service Centre.

Do not use your vehicle when no function appears on the display or when functions appear partially, since the instrument board is not in the condition to provide sufficient information about your vehicle.

SETTING

Power up the instrument board by connecting the battery to the vehicle's cables. Put the key in the ignition switch and turn it to. The names of stored flywheels appear successively on the display: before selecting your type, check the type of flywheel installedon your vehicle on the anti-tampering label under the seat (seepage 33). When the code of your model appears on the display, press the **MODE** button, to make your selection. If you choose the wrong model, you will be shown improper information (speed, km, etc.). If you choose the wrong model, turn the panel off, wait for about two minutes and repeat the above operations in the correct manner.

These operations must be repeated every time the battery is disconnected.

MILES OR KILOMETRES SELECTION

If you are driving in countries with different measurement systems, you can change the unit of measurement of speed (instant and average) and distance from kilometres to miles and vice versa. To make your selection, first of all the vehicle must be stationary. Now hold the **MODE** button down for 5" after selecting the TOD function. When „Mph" and „Km/h" appear, give the **MODE** button short presses until the unit of measurement starts flashing. Hold the **MODE** button down to save your selection. The instrument board will return to its normal display mode. Any stored information (with the exception of TOD) will be reset.

Using a unit of measurement that differs from the one used in the country where you are driving may lead to improper calculations, especially concerning the vehicle's speed. Consequences include exposure of the driver and others to dangers, as well as fines.

STARTING

Put the key into the ignition switch and turn it to . A check for all operations will automatically appear for 3 seconds, after which the last function used before turning off the vehicle will appear.

The check is automatically performed every time the key is turned to. If the check is not displayed, contact an authorised MALAGUTI Service Centre.

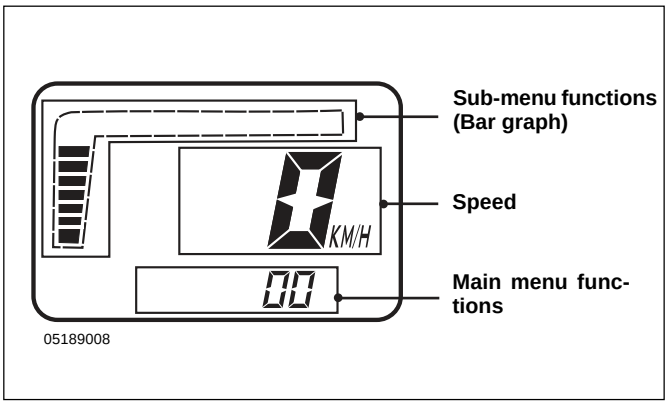
CHOOSING FUNCTIONS

Functions are divided into menus and sub-menus (bar graph), which make the display easier to understand.

To select a function, press the **MODE** button, as shown in the diagram.

The diagram shows you for how long the **MODE** button should be held down (near the arrows).

To help you identify the functions and acquire information about their characteristics, a description is provided here below, indicating the functions in the order in which they appear on the display

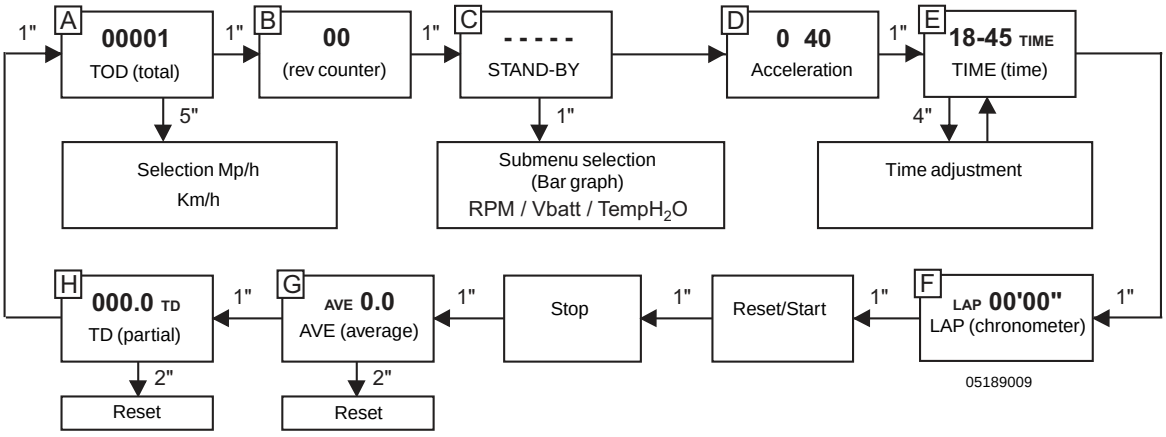


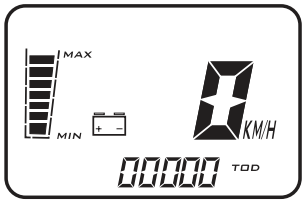
Menu functions can be seen from every sub-menu.

SPEED

This numeric value is displayed in km/h. This is the only function that is shown on the display at all times.

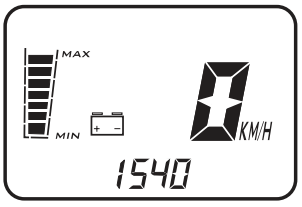
MAIN MENU FUNCTIONS





A) TOD FUNCTION

This indicates the total distance travelled; this value is never reset and remains even after the vehicle is turned off (the total distance travelled will be stored for 10 years running from the last time the vehicle was used).



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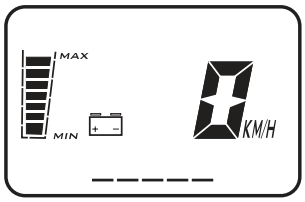
B) RPM FUNCTION

This indicates the vehicle's engine speed in revolutions per minute.

This value is also represented in graphical format by means of a bar graph (see Sub-menu Functions).



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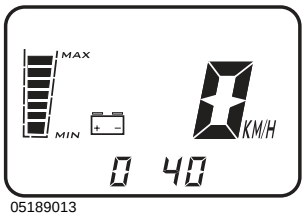
C) STAND-BY (sub-menu)

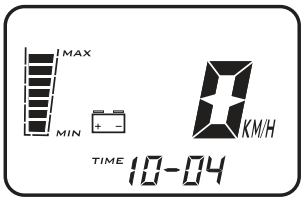
When this image appears on the display, you can switch the sub-menu display format (bar graph) from V-batt to RPM and vice versa by pressing the **MODE** within 3 seconds. If this command is not given within 3 seconds, the instrument board switches to the 0-40 function.



05189013

D) FUNCTION 0-40

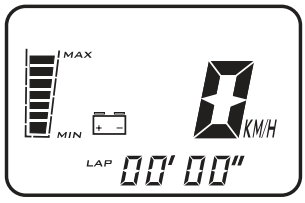
It shows acceleration from 0 to 40 km/h. This function is automatically reset after 15 seconds. The function can be called up again by starting the vehicle.



05189014

E) TIME FUNCTION

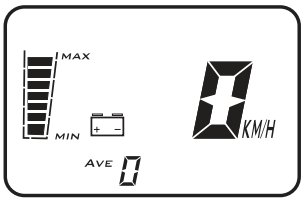
It shows the current time. To set the time, hold the **MODE** button down until the sub-menu (bar graph) disappears, then press the **MODE** button again to actually change the time setting. The increase will be slow for the first ten units and then become faster. To return to the normal display, do not press **MODE** for at least 3". If power is disconnected, this function will be automatically reset. The setting operation must be thus repeated. This operation must be performed with the vehicle at a standstill



05189015

F) LAP FUNCTION

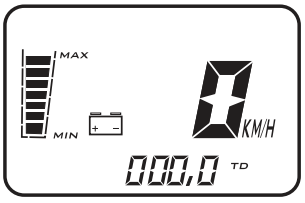
This is the chronometer. Press the **MODE** button once to **START** the chronometer (all previous data are reset); press again to **STOP**. To use this function, press the **MODE** button until you relocate the **LAP** function. Values are given in MIN and SEC.



05189016

G) AVE FUNCTION

This indicates the average speed in mph. The calculation does not include stops (speed = 0). To reset, hold the **MODE** button down when the vehicle is at a standstill until a '0' appears on the display.

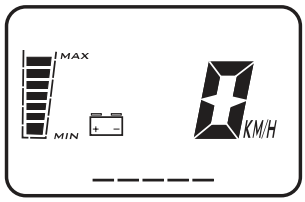


05189017

H) TD FUNCTION

This indicates the partial distance. To reset, hold the **MODE** button down with the vehicle stationary.

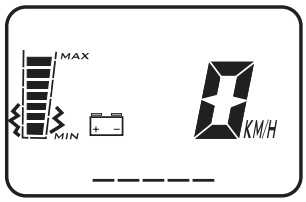
SUB-MENU FUNCTIONS



05189012

FUNCTIONS OF THE BAR GRAPH

To select one of the bar graph functions, open the main STAND-BY menu. When "- - - -" appears on the display, press the **MODE** button within 3". The bar graph will switch from engine speed (RPM) to battery charge level (V-batt) and finally to coolant temperature (Temp H_2O). The function is stored after 3 seconds.



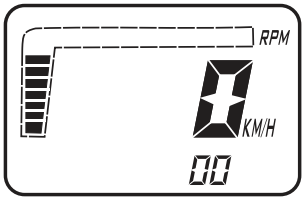
05189018

BATTERY CHARGE LEVEL

This check should be made with the engine off; if battery power drops to MIN., the symbol will flicker, irrespective of the function displayed.

When the battery charge level drops to its minimum threshold, the battery level function is automatically activated, irrespective of the function selected, and the last dash of the bar graph will flash. If you change function, the battery logo will remain displayed until the correct power supply is resumed.

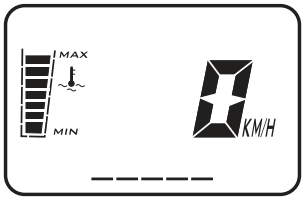
When the warning light comes on charge the battery as soon as possible.



05189019

RPM - ENGINE SPEED

This function shows engine speed in graphic format. The numeric value can be displayed with the RPM function of the Main Menu.



05189020

COOLANT TEMPERATURE INDICATOR

This displays the operating temperature of the coolant circuit.

When the temperature of the cooling circuitries s above the permissible threshold, the red indicator light on the instrument board will come on; stop the vehicle and follow the instructions provided on page 26.

Should the temperature probe not be connected, the red warning light on the right hand side of the instrument board will flash.

HANDLEBAR CONTROLS

1) Horn switch

Press this switch to sound the horn.

2) Turn indicator switch

To signal a right-hand turn, push the switch rightwards; push leftwards for a left-hand turn. When released, the switch returns to centre. To disable the turn signals, press the switch.

3) Starter (choke) lever

Using this lever helps cold starting the scooter; remember to reposition the starter in the closed position, B, after warming up the engine (B - closed; A - open).

4) MODE button

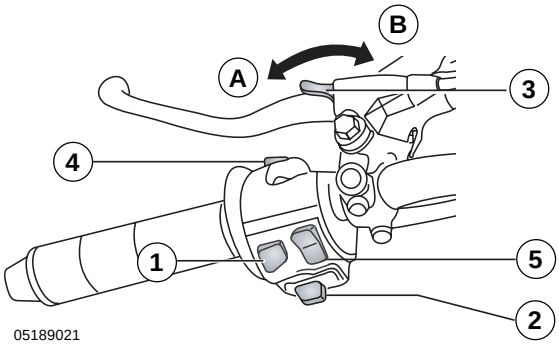
Press this button to select functions of the digital instrument board.

5) Low beam/high beam light switch

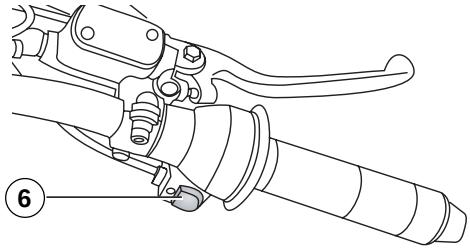
This switch operates the low beam/high beam lights.

6) START button

This button starts the engine. This button is active only when the main switch is ON and the clutch lever is operated.



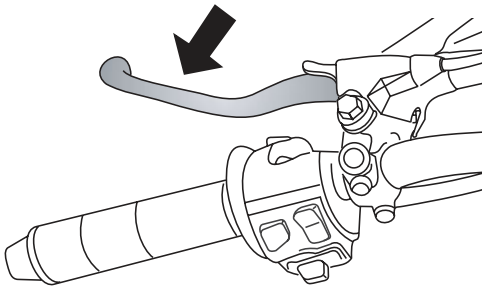
05189021



05189022

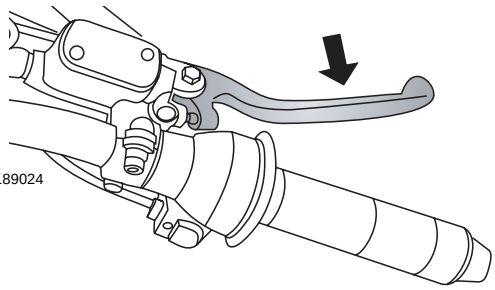
CLUTCH LEVER

The clutch lever is located on the left-hand side of the handlebar. It engages or disengages the clutch. Pull the clutch lever towards the handlebar to disengage the clutch and release it to engage it. For smooth clutch operation, the lever must be pulled rapidly and released slowly.


05189023

FRONT BRAKE LEVER

The front brake lever is on the right-hand side of the handlebar. To apply the front brake, pull the lever towards the handlebar.


05189024

2-STROKE ENGINE OIL

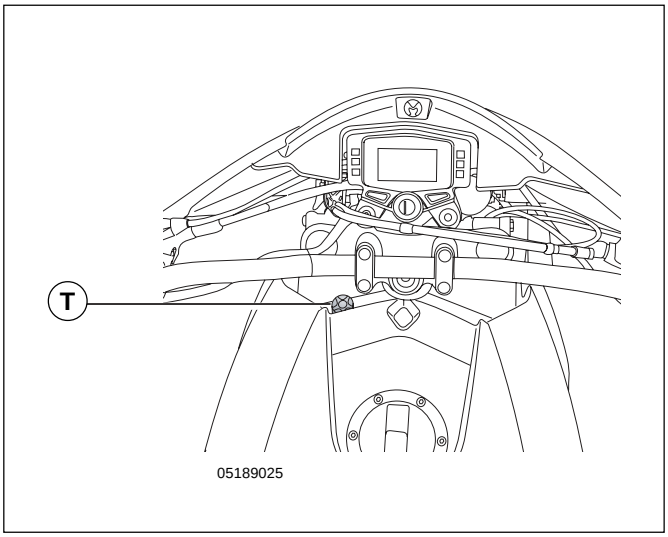
Make sure that there is sufficient oil in the 2-stroke engine oil tank.

Never use the vehicle without oil.

To fill the tank with oil, remove the cap (T) and pour the oil carefully in.

There is an electrical contact inside the tank that turns the red reserve light of the instrument board on when the tank is running out of lubricant.

When the reserve light comes on, fill the tank at the first opportunity.



OIL TANK	Lt
TOTAL TANK CAPACITY	1.3
Reserve	0.3

Recommended oil

JASO FC or ISO-LEGA2-STROKE ENGINE OIL

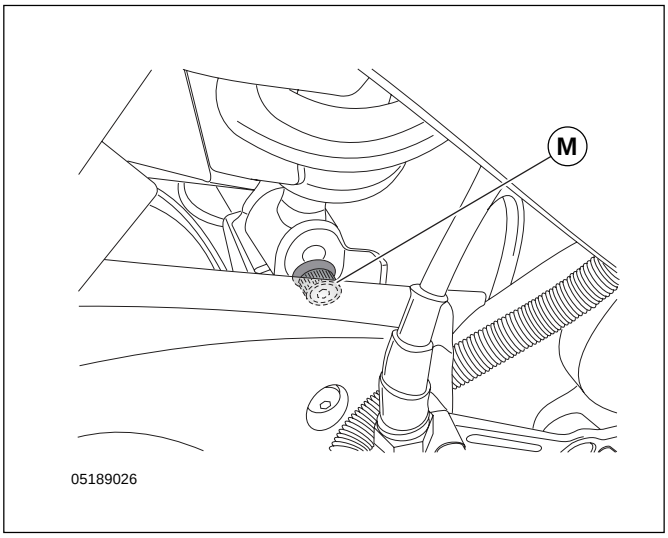
REAR CARRIER

Do not exceed the load limit: 2 kg.

ADJUSTING THE DRIVING POSITION

By moving the bottom fastening element of shock absorber (M) (double hole in the bottom fixing bracket), you can adjust the height of the vehicle's seat.

This operation must be performed by an Authorised MALAGUTI Service Centre.



PERIODIC MAINTENANCE AND LUBRICATION

The annual checks must be performed every year, except if a kilometre-based maintenance is performed instead.

From 30,000 km (18641. 14 mi), repeat the maintenance intervals starting from 6,000 km (3728. 23 mi).

Items marked with an asterisk should be performed by a **MALAGUTI** Dealer as they require special tools, data and technical skills.

Servicing the scooter should be done every 6000 Km, except for the first service after only 1000 Km.

N.		POSITION	CHECKS OR MAINTENANCE JOB	ODOMETER READING (X 1000 KM) (621, 37 MI)					ANNUAL CHECK
				1	6	12	18	24	
1	*	Fuel line	• Check fuel hoses for cracks or damages.		X	X	X	X	X
2	*	Spark plug	• Replace		X	X	X	X	X
3	*	Air filter element	• Clean		X		X		
			• Replace			X		X	
4	*	Battery	• Check electrolyte level and specific gravity. • Make sure that the breather hose is properly routed.		X	X	X	X	X
5	*	Clutch	• Check operation. • Adjust.	X	X	X	X	X	
6	*	Front brake	• Check operation, fluid level and vehicle for fluid leakage.	X	X	X	X	X	X
			• Replace brake pads.	Check every 2000 km if worn to the limit (1242, 74 mi)					
7	*	Rear brake	• Check operation, fluid level and vehicle for fluid leakage.	X	X	X	X	X	X
			• Replace brake pads.	Check every 2000 km if worn to the limit (1242, 74 mi)					
8	*	Brake hoses	• Check for cracks or damage		X	X	X	X	X
			• Replace	Every 4 years					
9	*	Wheels	• Check for run out and damage and check tightness of spokes. • Tighten spokes if necessary.		X	X	X	X	
10	*	Tyres	• Check tread depth and for damage. • Replace if necessary. • Check air pressure. • Correct if necessary.		X	X	X	X	X
11	*	Wheel bearings	• Check for looseness and damage.		X	X	X	X	
12	*	Swing arm	• Check operation and for excessive play.		X	X	X	X	
			• Lubricate with lithium-soap based grease.	X	X	X	X	X	
13		Drive chain	• Check chain slack. • Make sure the rear wheel is properly aligned. • Clean and lubricate.	**Every 500 km and after washing the vehicle or riding in the rain (318, 68 mi)**					
14	*	Steering bearings	• Check bearing play and steering for roughness.	X	X	X	X	X	
			• Lubricate with lithium-soap based grease.	Every 24, 000 km (14912, 91 mi)					
15	*	Chassis fasteners	• Make sure that all nuts, bolts and screws are properly tightened.		X	X	X	X	X
16	*	Side stand	• Check operation. • Lubricate.		X	X	X	X	X
17	*	Fork	• Check operation and for oil leakage.		X	X	X	X	
18	*	Shock absorber assembly	• Check operation and shock absorber for oil leakage.		X	X	X	X	
19	*	Rear suspension relay arm and connecting arm pivoting points	• Check operation.		X	X	X	X	
			• Lubricate with lithium-soap based grease.			X		X	

N.		POSITION	CHECKS OR MAINTENANCE JOB	ODOMETER READING (X 1000 KM) (621, 37 MI)					ANNUAL CHECK
				1	6	12	18	24	
20	*	Carburettor	• Check choke operation. • Adjust engine idling speed.	X	X	X	X	X	X
21	*	Mix oil pump	• Check operation. • Purge air if necessary.	X		X		X	X
22	*	Transmission oil	• Check oil level.	X	Every 3000 km (1864. 11 mi)				X
			• Change.	X	X	X	X	X	
23	*	Cooling system	• Check coolant level and vehicle for coolant leakage		X	X	X	X	X
			• Change.	Every 3 years					
24	*	Front and rear brake switches	• Check operation.	X	X	X	X	X	X
25	*	Moving parts and cables	• Lubricate.		X	X	X	X	X
26	*	Lights, signals and switches	• Check operation. • Adjust the headlight.	X	X	X	X	X	X

The air filter needs more frequent service if you are riding in unusually wet or dusty areas.

Hydraulic brake service:

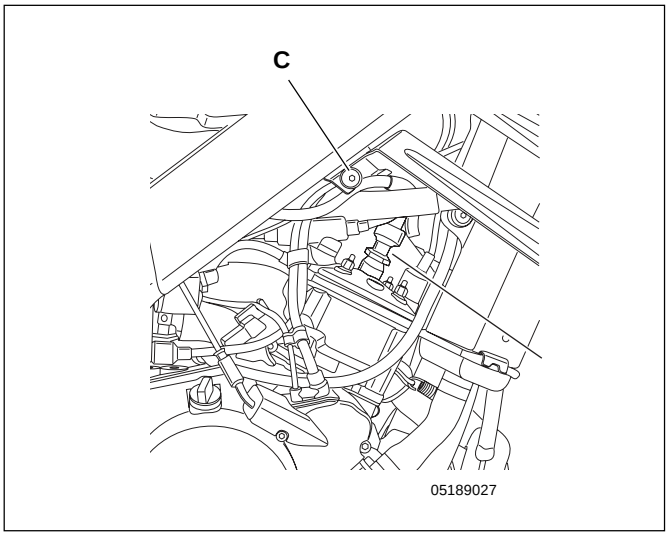
- **Regularly check and, if necessary, correct the brake fluid level.**
- **Replace the brake hoses every four years and if cracked or damaged.**

The maintenance schedule is based on average riding conditions. Machines subject to severe use or ridden in unusually wet or dusty conditions or off the road require more frequent servicing.

SPARK PLUG

REMOVING THE SPARK PLUG

- Remove the spark plug cap.
- Unscrew the spark plug (C) with the wrench provided in the tool kit, and remove it.

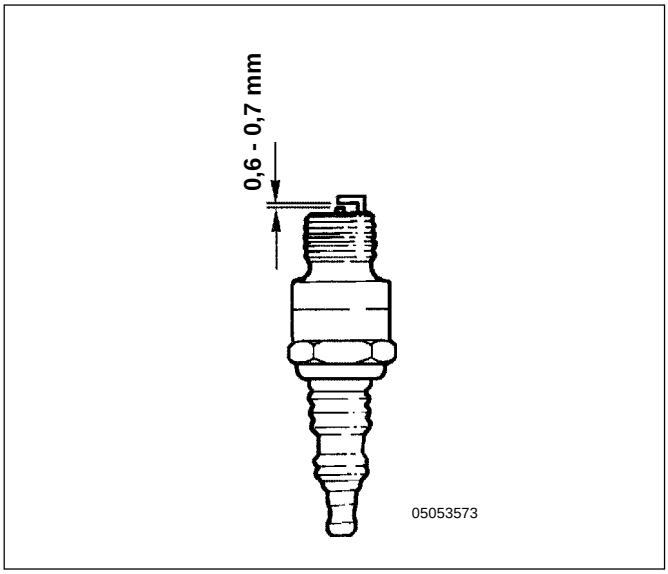


INSPECTION

Specified spark plug: **NGK BR9ES**

The spark plug is an important engine component.

- To service it, simply remove the plug cap and unscrew the plug with the wrench supplied for this purposes **(take particular care if the engine is hot)**.
- Examine the condition of the spark plug when the engine is warm, since the deposits and the colour of the insulator provide useful information about the thermal rating of the plug, about carburation, lubrication and the general condition of the engine
- A **light tan** colour of the insulator around the centre electrode indicates that engine is **correctly functioning**.
- If the spark plug shows a distinctly different colour, the engine could be defective. Do not attempt to diagnose such problems yourself. Instead have a MALAGUTI Dealer check the vehicle.
- Remove the spark plug and thoroughly clean its electrodes and insulator, using a metal brush. Adjust the gap between the electrodes with a thickness gauge: the gap should be 0.6 - 0.7 mm.



Using spark plugs with heat rating other than the recommended value (as marked on the plug) can result in serious damage to the engine.

If the spark plug insulator is cracked and/or electrodes are corroded it must be replaced immediately.

INSTALLING THE SPARK PLUG

- Clean the surface of the gasket. Wipe off any grime from the spark plug threads.
- Install the spark plug with the spark plug wrench, and then tighten it to the specified torque.

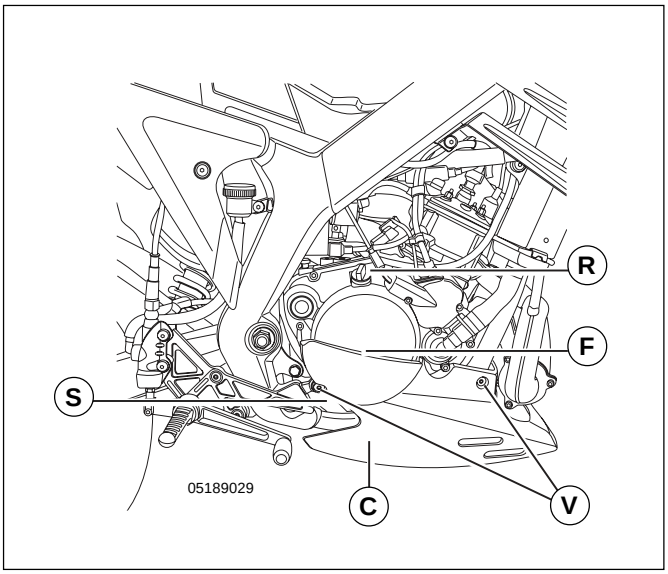
Spark plug tightening torque: 20/25 Nm (2.0/2.5 Kgm)

If a torque wrench is not available when installing a spark plug, a good estimate of the correct torque is ¼ - ½ turn past finger tight. However, the spark plug should be tightened to the specified torque as soon as possible.

- Install the spark plug cap.

TRANSMISSION OIL

CHANGE



- Park the vehicle on flat ground.
- Start the engine and warm it up for several minutes.
- Stop the engine.
- Remove crankcase (C) by loosening the four screws, (V).
- Place an oil pan under the engine and remove the filler cap, (R).
- Remove the drain screw, (S), and screw (F) to drain the oil.
- Reinstall the drain screw and then tighten it to the specified torque.

  Drain screw tightening torque: 17/18 Nm (1.7/1.8 Kgm).
- Fill the engine with oil until this is dripping from the level control hole, (F). Fit the screw back into hole (F), install the oil filler cap, (R), and tighten it.
- The use of SAE 10W 40 oil is recommended.
- Refit crankcase (C) and secure in place by tightening the four screws, (V).

Do not mix any chemical additives with the oil. Transmission oil also lubricates the clutch and chemical additives may cause slippage.

Dispose of oil in accordance to the laws in force: DO NOT DISPOSE OF WASTE OIL IN THE ENVIRONMENT.

During this operation, avoid any contact with the cylinder: DANGER OF SCORCHING.

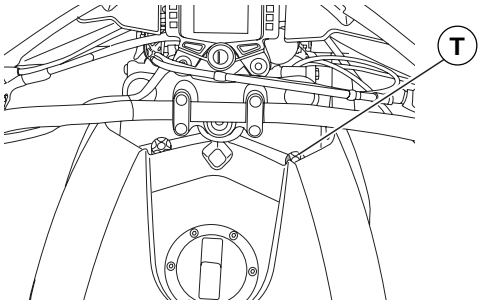
Start the engine and let it warm up for a few minutes. While it is warming up, check for oil leakage. If oil is leaking, immediately turn off the engine and locate the cause.

Check oil level every 3000 km. (1864. 11 mi)
Change oil every 6000 km. (3728. 23 mi)
Engine crankcase capacity: 0. 82 L.

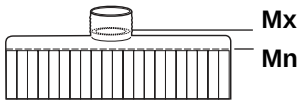
COOLING SYSTEM

- Remove cap (T).
- The coolant level must be checked on a cold engine since the level varies with engine temperature. The coolant should be between the maximum "**Mx**" (top end of the radiator) and minimum level "**Mn**" (start of battery cells) marks.
- If the level is low, add coolant or distilled water until the specified level is reached.
- Refit the cap.

Salt or hard water is dangerous for the engine. If you do not have any coolant you can use distilled water or fresh water. In winter it is necessary to correct the proportion of coolant and water in order to avoid freezing or possible damage.



05189030



05189031

AIR FILTER

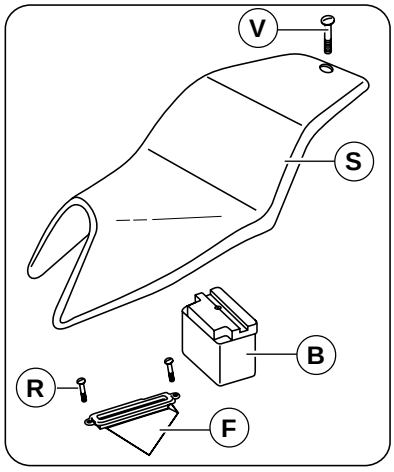
DISASSEMBLY

- Remove the seat, (S), by slackening screw (V).
- Remove the general protection fuse.
- Remove battery (B) by removing the elastic band and disconnecting the terminals.
- Remove partition (P) to access screw (R).
- Remove filter (F) by slackening the two fixing screws, (R).

The air filter element must be cleaned at the intervals specified. Clean the air filter more frequently if you are riding in unusually wet or dusty areas.

Make sure the air filter element is properly seated in the air filter case.

The engine should never be operated without the air filter element, otherwise the piston and/or cylinder may become excessively worn.



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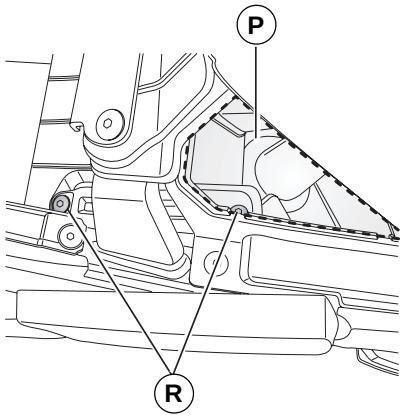


05189031

ADJUSTING THE CARBURETTOR

The carburettor is an important part of the engine and requires very accurate adjustments.

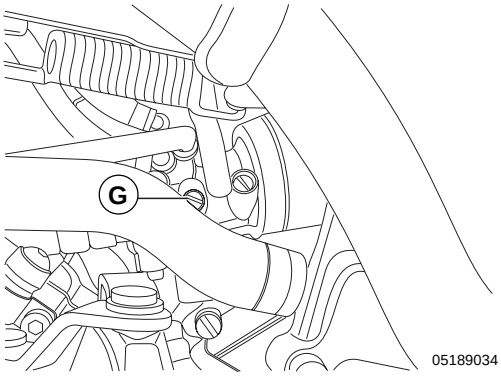
Therefore, most carburettor adjustments should be left to an Authorised **MALAGUTI** Service Centre, who has the necessary professional knowledge and experience.

The carburettor has been set and extensively tested at the MALAGUTI factory. Changing these settings may result in poor performance or damage to the engine.

ADJUSTING THE IDLING SPEED

- Start the engine and warm it up for several minutes at about 1000-2000 rpm, while occasionally revving it to 4000 to 5000 RPM. The engine is warm when it quickly responds to the throttle.
- To adjust the engine idling speed, turn the throttle stop screw, (G). Turn the screw clockwise to increase idling speed or counter-clockwise to decrease it.

Standard engine idling speed: 1800- 2000 rpm.



ADJUSTING THE THROTTLE CABLE

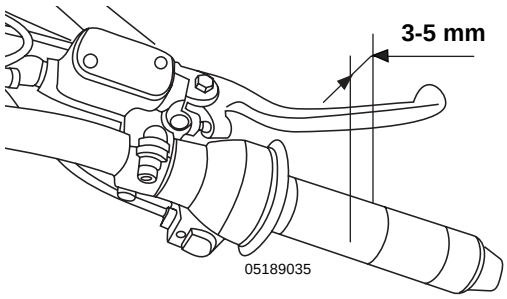
The engine idling speed must be correctly adjusted before checking and adjusting the throttle cable free play.

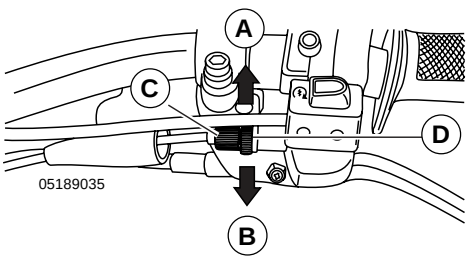
Adjust the throttle cable by turning the adjusting nut until the appropriate free play is obtained.

Play: 3-5 mm

ADJUSTMENT

- Loosen locknut (C).
- Turn adjusting nut (D) to (A) to increase free play or to (B) to decrease it.
- Tighten the locknut.





TYRES

The tires are TUBELESS, and therefore do not feature an air tube.

To maximise performance, durability and safe operation, note the following points:

TIRE AIR PRESSURE

- Check and adjust the tire air pressure before using the vehicle.

The tire air pressure must be checked and adjusted when the temperature of the tires equals the ambient temperature. The tire air pressure must be adjusted on the basis of the total weight of the cargo, rider, passenger, and accessories (cowling, bags, etc., if approved for this model) and of the speed of the vehicle.

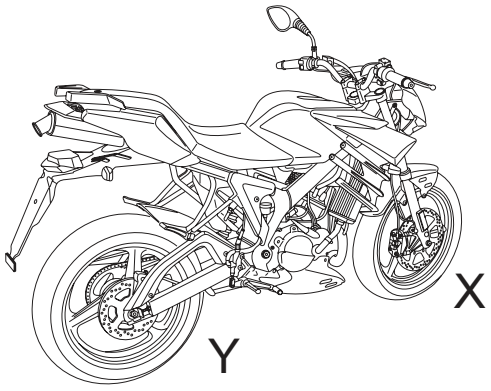
An appropriate load has an important effect on handling, braking, performance and safety characteristics of the vehicle. Do not carry along loosely packed items, which can dislodge during a ride. Check the tire condition and air pressure before each ride.

NEVER OVERLOAD YOUR VEHICLE! Make sure the total weight of the cargo, rider, passenger and accessories (cowling, bags, etc., if approved for this model) does not exceed the specified maximum load for the vehicle (160 Kg).

The user of an overloaded vehicle can cause damage to the tires, accidents and serious injuries.

bar (psi)		
X	2.0 (29,0)	2,2 (31.9)
Y	2.0 (29,0)	2,2 (31.9)

05189037



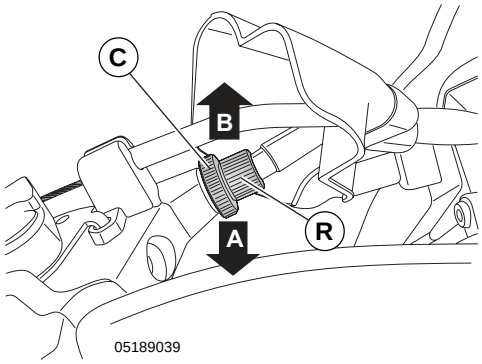
05189038

Wheel position	FR.	REAR
Dimensions	100/80-17 52S	130/70-17 62S
Type	ROAD	

ADJUSTING THE CLUTCH LEVER FREE PLAY

The clutch lever free play should measure 10-15 mm.

- Loosen the locknut, (C), of the clutch lever.
- Turn adjuster (R) of the clutch lever towards (A) to reduce free play or towards (B) to increase it.
- Tighten the locknut of the clutch lever.



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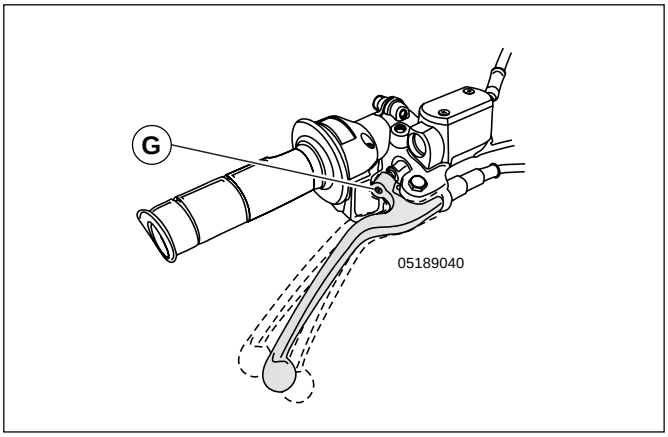
ADJUSTING THE FRONT BRAKE LEVER FREE PLAY

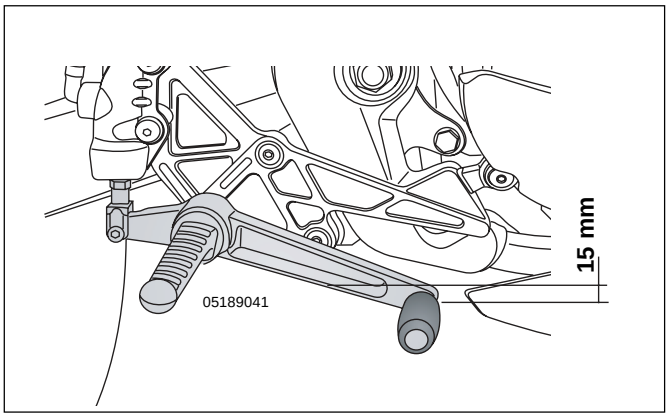
The front brake free play should measure 2-5 mm.

- Turn dowel (G) clockwise to reduce free play or counter-clockwise to increase it.



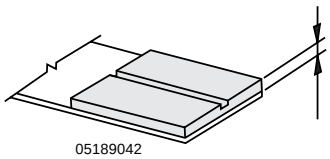
ADJUSTING THE REAR BRAKE PEDAL POSITION

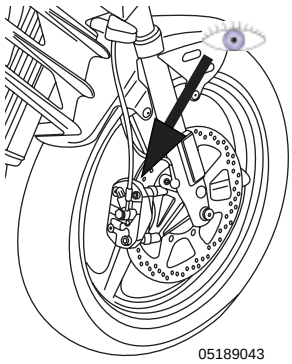
The upper end of the brake pedal must be positioned **15 mm** under the upper part of the footboard.

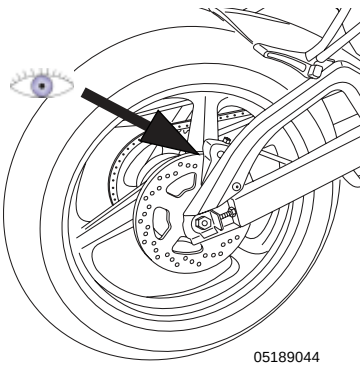


CHECKING THE FRONT AND REAR BRAKE PADS

- It is good practice to check the front/rear pads and discs every 2,000 km.
- The minimum thickness of the brake pad lining **is 2 mm**; visually check the thickness of the brake pads.
- If the pads have worn to their minimum permissible thickness, or are worn or damaged, replace them immediately.







CHECKING THE BRAKE FLUID LEVEL

If the brake liquid is insufficient, air bubbles may form in the braking system thus impairing the effectiveness of the brake. Before starting, make sure the brake liquid level of the rear brake reservoir is above the minimum level mark. As far as the front brake is concerned, the level of liquid can be checked through the sight glass on the pump; replenish if necessary.

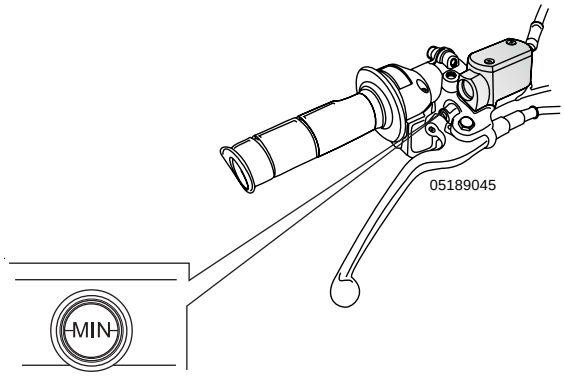
Observe the following precautions:

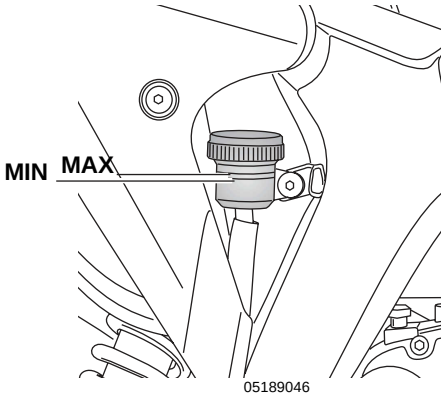
- When checking the fluid level, make sure that the reference line of the sight glass is horizontal when the handlebar is turned.
- Use only recommended brake fluids, otherwise the rubber seals may deteriorate, causing leakage and poor braking performance.
- Recommended brake fluid: DOT 4

Refill with the same make of brake fluid. Mixing fluids may result in a harmful chemical reaction and lead to poor braking performance.

When adding fluid, be careful that water does not enter the container. Water will significantly lower the boiling point of the fluid, and may result in vapour lock.

Brake fluid may deteriorate painted surfaces or plastic parts. Always clean up spilled fluid immediately.

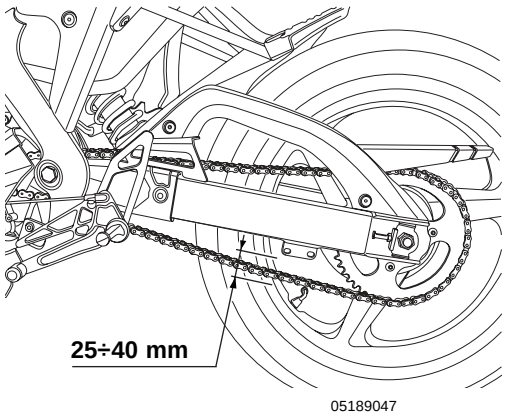




CHECKING DRIVE CHAIN SLACK

Check and/or adjust the chain when it is taut to the maximum extent possible.

To check the tension of the chain, the scooter must be standing upright and there should be no one on the scooter. Check slack in the position shown in the illustration. The normal vertical travel is about 25÷40 mm. Otherwise adjust the chain tension.



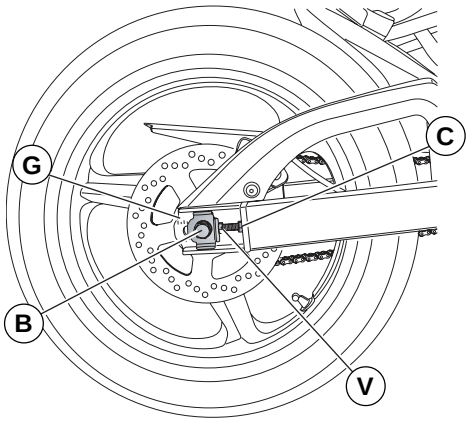
ADJUSTING DRIVE CHAIN SLACK

To adjust chain slack, loosen the wheel fixing nut, (B), locknut (C) and turn adjusting screw (V). After adjusting, tighten the locknut, (C), and bolt, (B).

This operation must be performed on both sides of the rear fork; adjustment must be identical on both sides; to obtain this condition, refer to scale "G" located on the fork.

An excessively taut chain will put the engine and drive components under excessive strain; maintain chain tightness within the specified limits.

Whilst carrying out these adjustments, hold the vehicle firmly in place, otherwise it will fall over.



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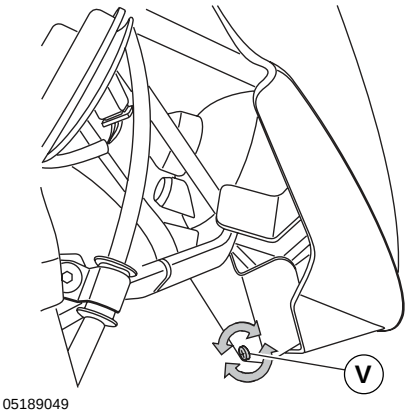
ADJUSTING THE BEAM

To adjust the beam, act on screw (V) located under the headlight; turn clockwise to lower and counter-clockwise to raise.



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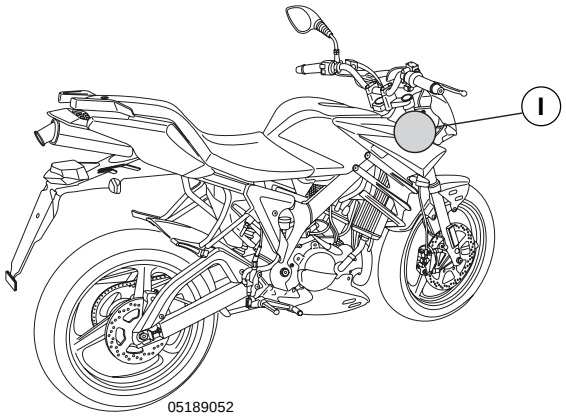
VEHICLE IDENTIFICATION NUMBER

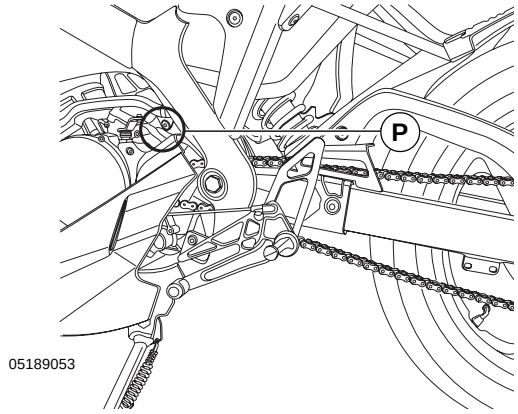
The vehicle identification number, (I), is stamped onto the steering pipe. Record this number in the space provided.

The vehicle identification number is used to identify your moped.



ENGINE IDENTIFICATION NUMBER

The engine identification number (P) is visible on the left hand casing.



ANTI-TAMPERING LABEL

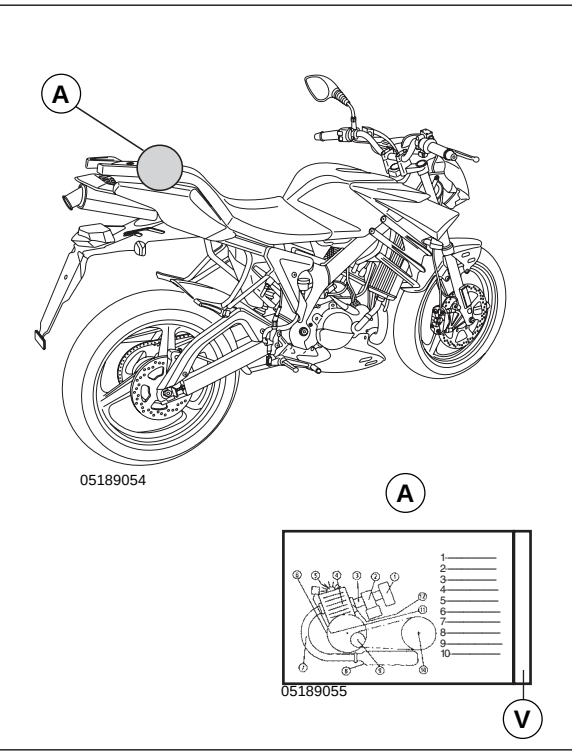
The anti-tampering label, (A), is located under the seat. It bears all the vehicle identification data envisaged by the 97/24/CE Directive.

If you intend to replace the compartment under the seat, make sure it is provided with the anti-tampering label.

When ordering spare parts, also quote the vehicle identification data.

This label identifies the type of flywheel installed on the engine (V); this piece of information will be need to correctly set the functions of the digital instrument board, should this be necessary.

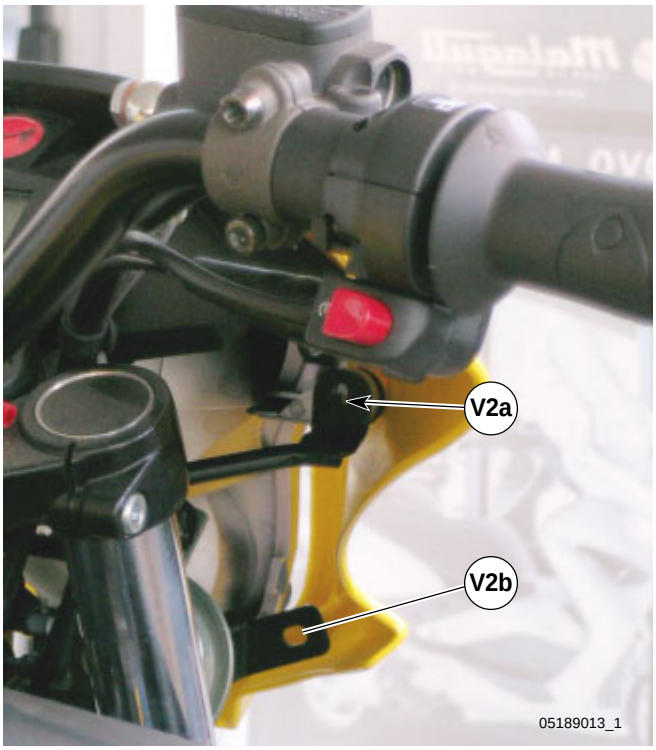
This label must be neither removed nor changed.



HEADLIGHT GUARD

- Undo screws (V2a) and (V2b).

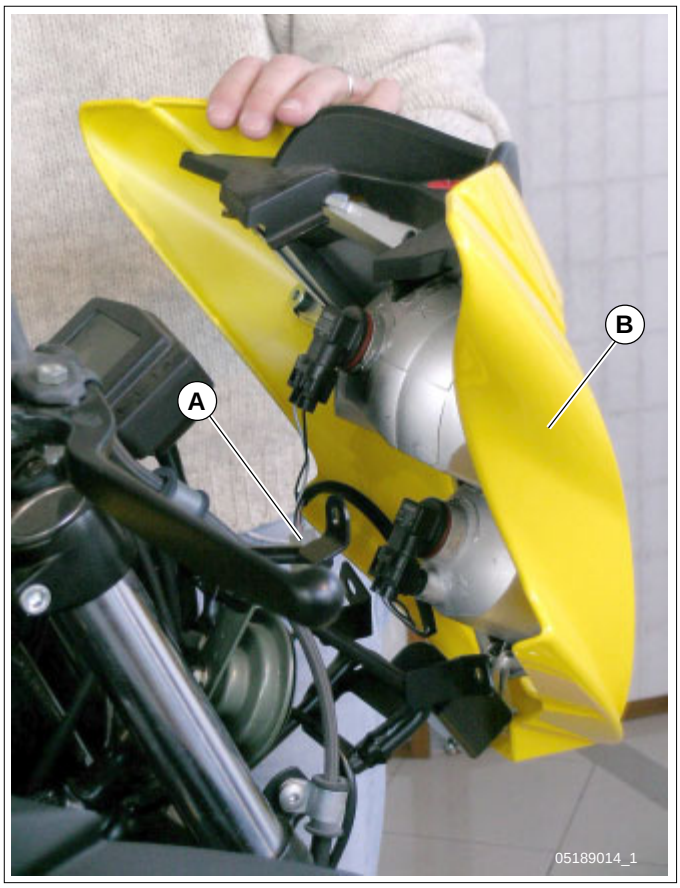
NOTE ***The screws (V2a), the top ones, are longer than the lower ones (V2b); if switched over during the successive mounting they push through the headlight guard.***



- Undo the height adjustment screw (V) of the beam.

Once the headlight guard has been mounted, it is necessary to adjust the beam. (See "Adjusting the beam").

- Disconnect the connector (A) from the headlights and remove the headlight guard (B).



ACCESSIBILITY

Removing the footboard provides access to the following components:

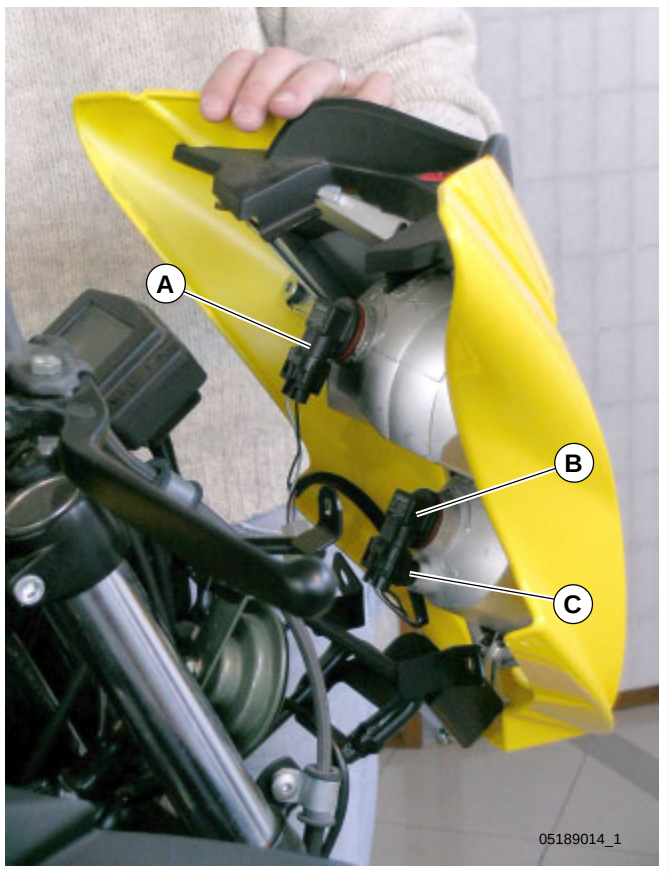
- connector of the digital instrument panel (A);
- horn (B).

REPLACING THE HEADLIGHT BULBS

- (Remove the headlight guard– without necessarily removing the beam adjustment screws and disconnect the connector).
- Rotate the bulb holder (A), (B) or (C) corresponding to the burnt out bulb anticlockwise through 90° and remove it from the headlight.
- Remove the bulb and replace it.

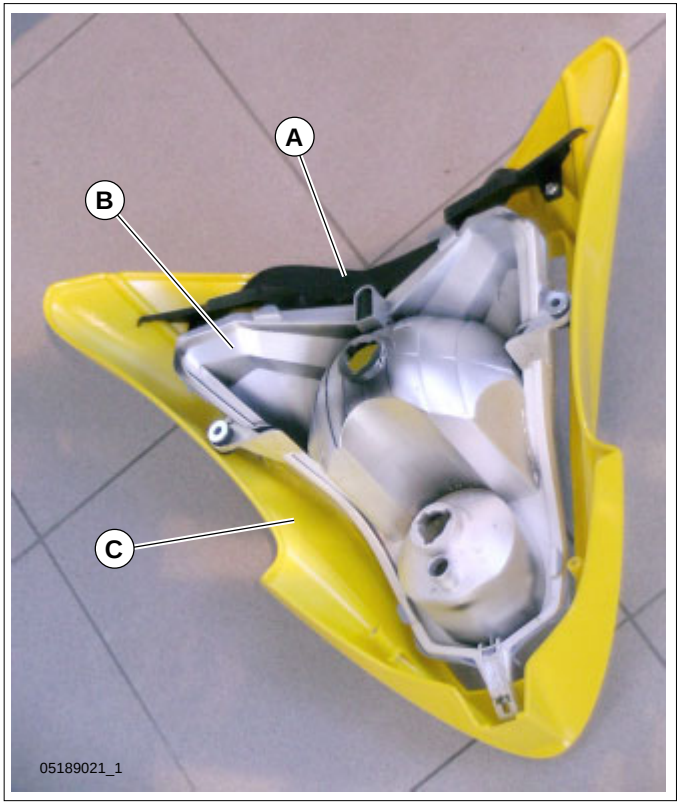
LIGHT BULBS USED

A - bulb for high beam 12V 35W
B - bulb for low beam headlight 12V 35W
C - bulb for parking lights 12V 3W



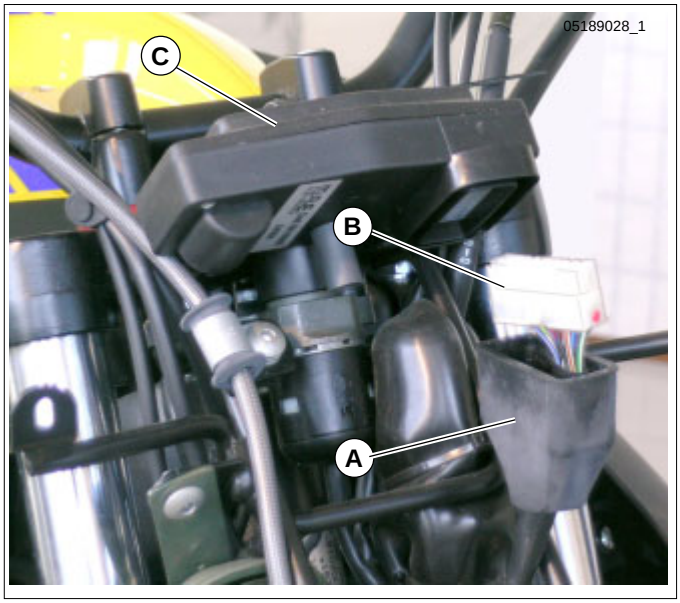
HEADLIGHT

- (Remove the headlight guard).
- Pull back the retaining lips of the anti-vibration protection from the (A) of the headlight (B), so as to unhook them.
- Remove the headlight (B) from the headlight guard (C).

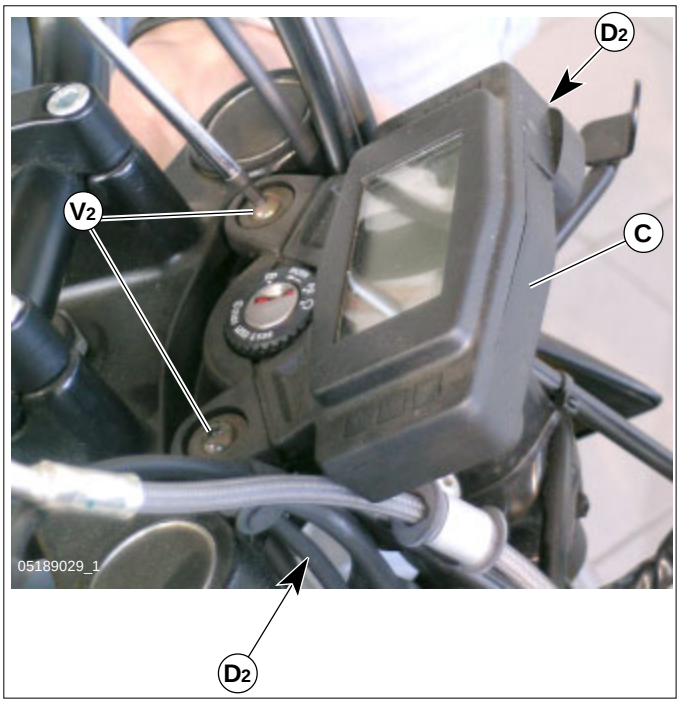


DIGITAL INSTRUMENT PANEL

- (Remove the headlight guard).
- Pull away the rubber protection (A) and disconnect the connector (B) from the digital instrument panel (C).

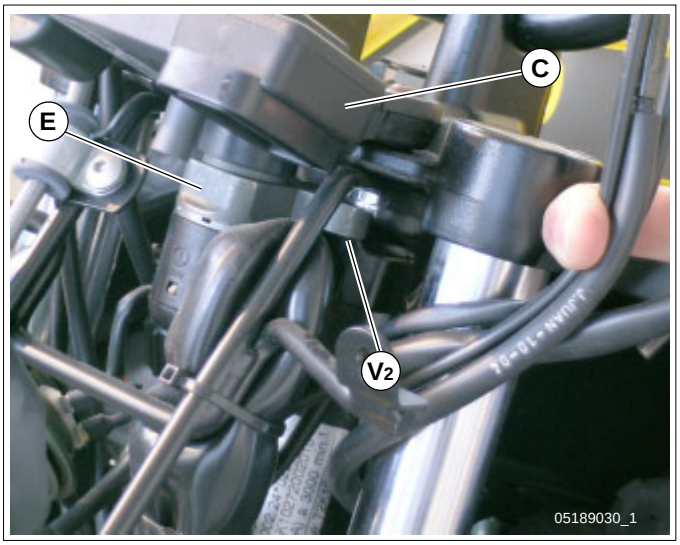


- Undo the screws (V2) holding a spanner under the nuts (D2) then remove the digital instrument panel (C).



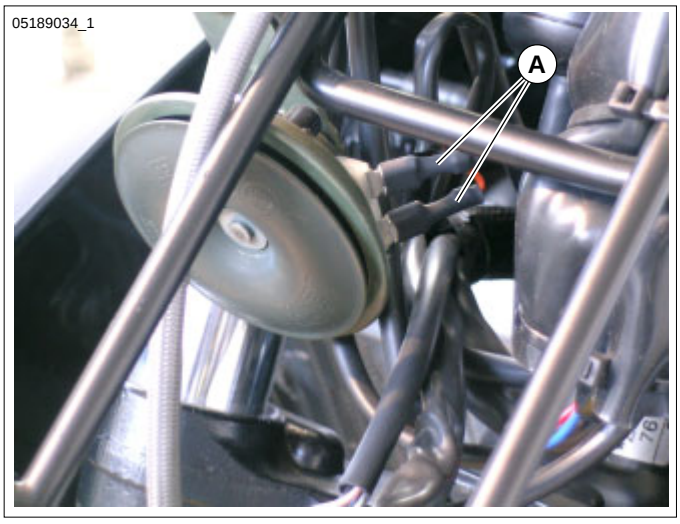
KEY SWITCH

- Use a TORKS wrench for tamperproof screws to unscrew screws (V2). Malaguti spare part 086. 066. 00); then pull out the key switch (E) from the digital instrument panel (C).

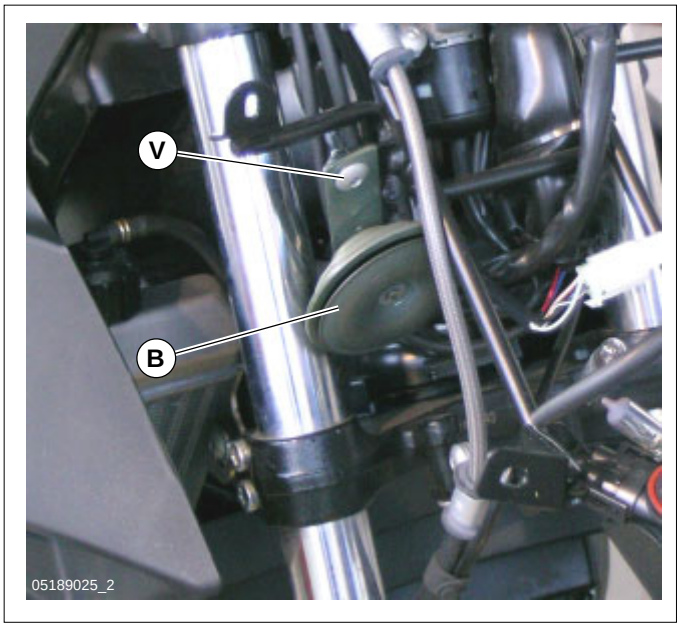


HORN

- (Remove the headlight guard).
- Disconnect connectors (A).

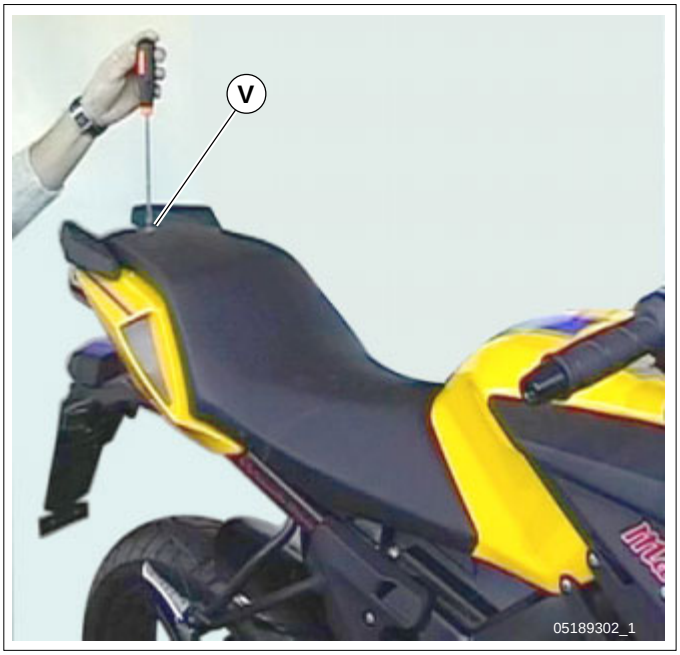


- Undo screw (V) and remove horn (B).



SEAT

- Undo the special screw (V).

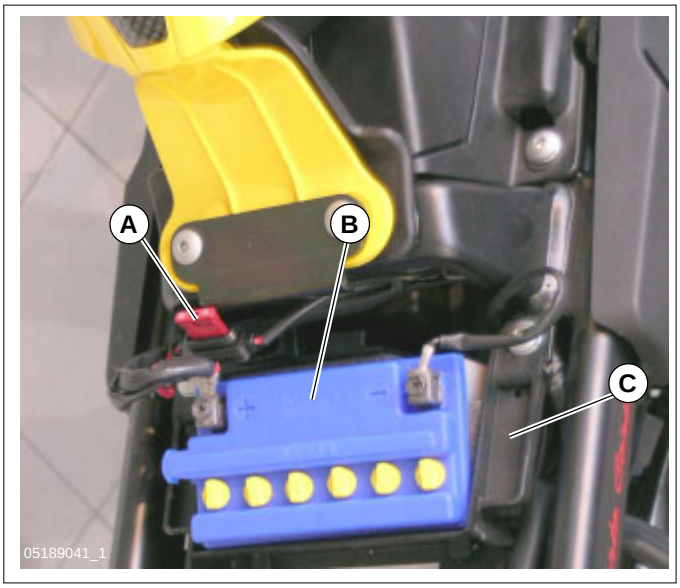


- Disengage the saddle, (A) pulling towards the rear of the scooter and remove it.

ACCESSIBILITY

Removing the seat provides access to the following components:

- main fuse (10 A) (A)
- battery (B)
- air filter (C)

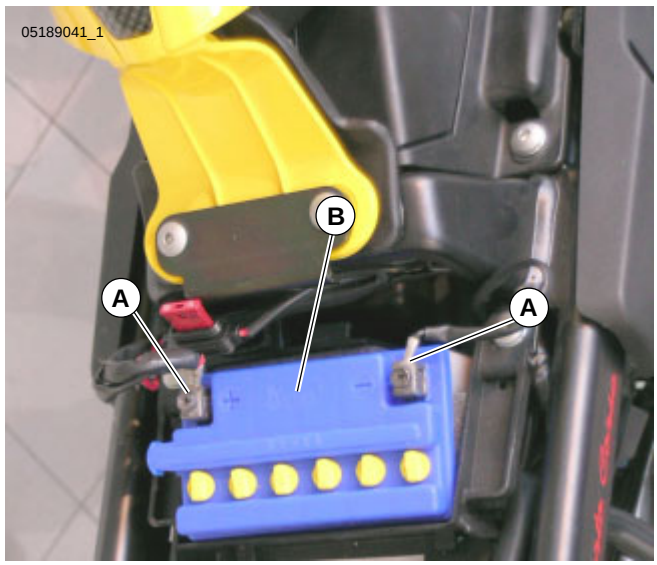


BATTERY

- (Remove seat).
- Disconnect the clamps (A) and remove the battery (B).

Note that:

- the RED leads must be connected to the battery POSITIVE “+” terminal;
- the BLACK lead must be connected to the battery NEGATIVE “-” terminal;
- the battery terminals must be towards the REAR of the scooter.

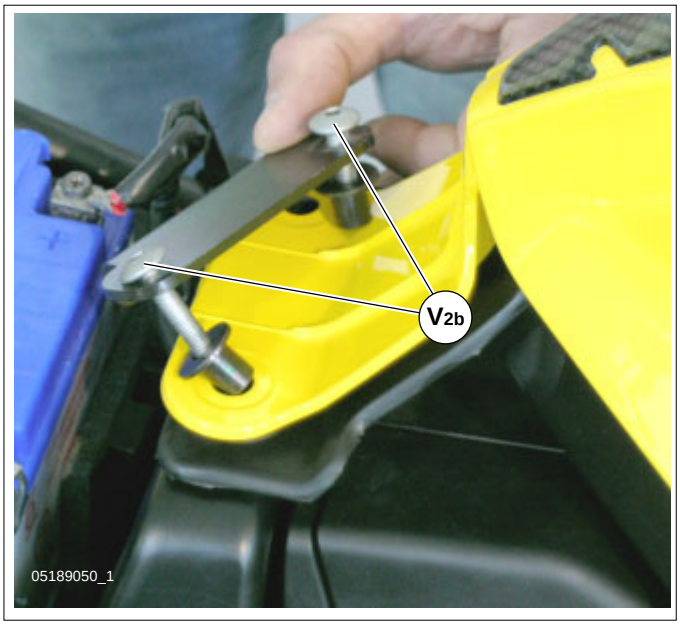


FUEL TANK COVER

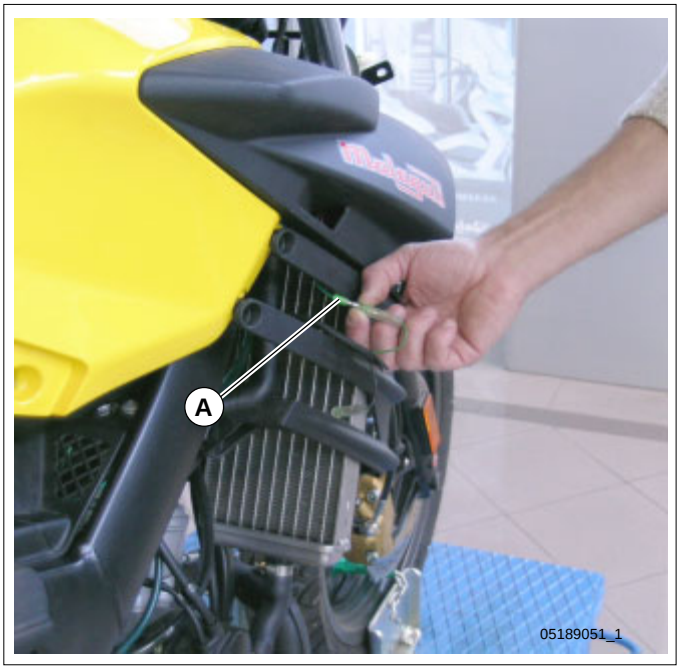
- (Remove seat).
- Undo screws (V4) and (V2a).
- Undo screws (V2b)

Pay attention to the bushes under the screws (V4) and (V2a); the screws (V2a), besides being shorter than the screws (V4), are screwed into brass inserts set in the tank of the scooter; therefore take care not to ruin the thread of these inserts when reassembling.

The screws too (V2b) have bushes, but they are longer than the previous ones.



- Disconnect the connectors (A) from the front turn indicators on BOTH sides of the scooter.



- Pull out fuel tank cover (B) towards the rear of the scooter.

NOTE ***To dismantle the feeders (C) from the fuel tank cover (B), consult Table C of the Spare Parts Catalogue.***

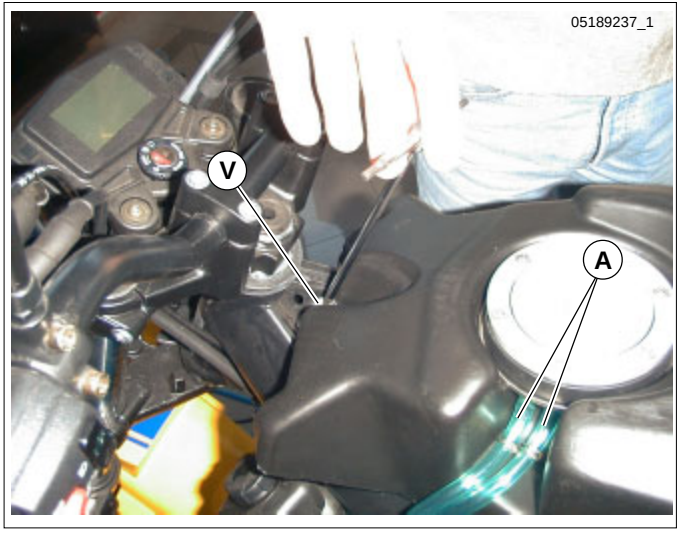
FUEL TANK

- (Remove seat).
- (Remove fuel tank cover).

During this procedure do not use heat and keep sparks and naked flames well clear of the scooter.

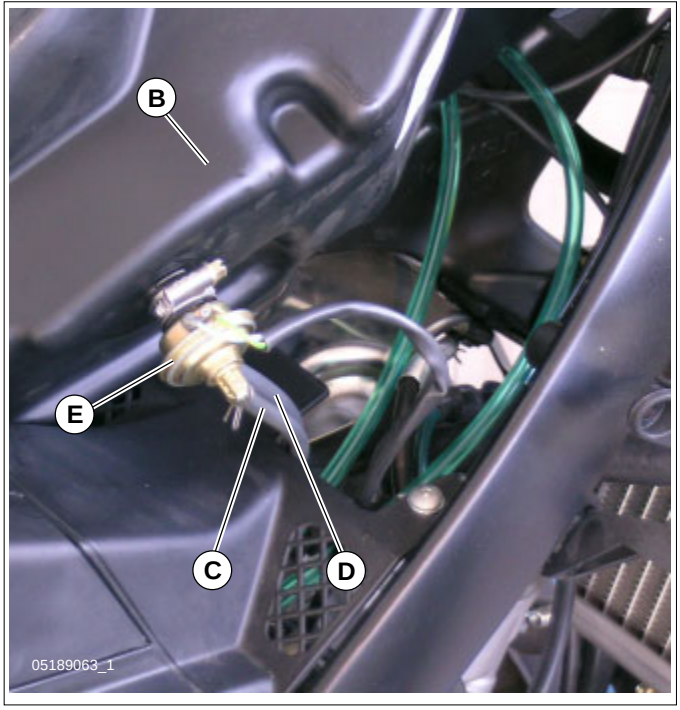
- Disconnect the two vent tubes (A) and undo the screws (V).

Watch out for the bush under the screw (V).



- Raise the tank (B) slightly, making sure not to damage the electrical cables of the fuel level sensor.
- Disconnect the depression tube (C) and the fuel tube (D) from the valve (E).

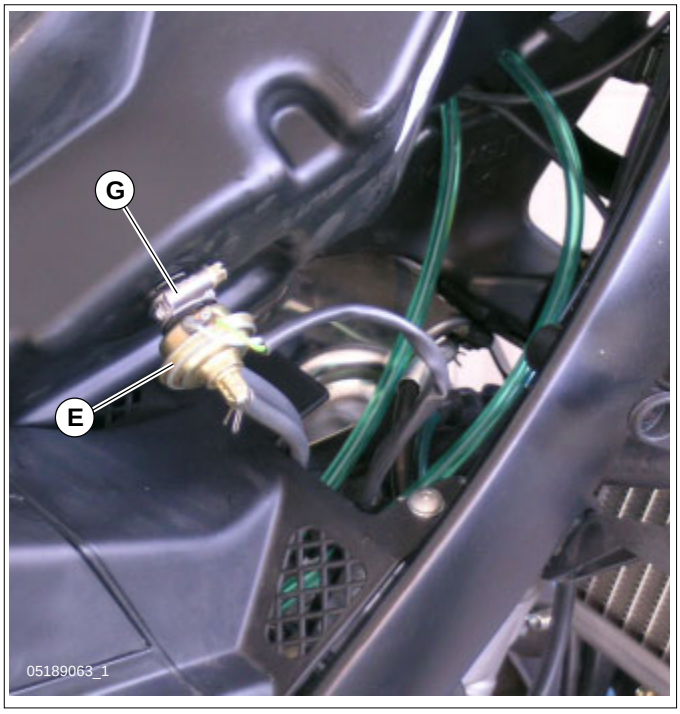
The depression tube (C) is the one with the SMALLER diameter and should be connected to LOWER fitting of the valve (E); vice versa, the feeder tube (D) is the one with the LARGER diameter and should be connected to the UPPER fitting of the valve (E).



- Disconnect the connector (F) and remove the tank (B).

The connector (F) can be reached from UNDER the tube section of the frame.

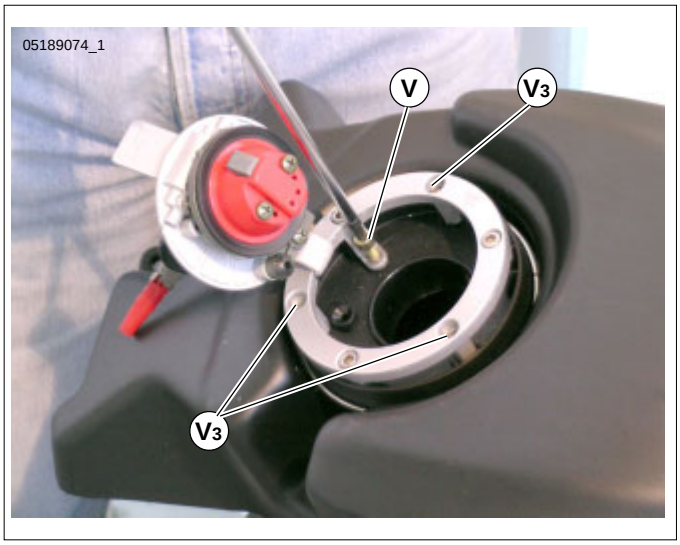
To replace the valve (E), it is necessary to loosen the clamp (G) and pull the valve (E) out entirely. The fuel gauge sensor is incorporated into the fuel valve.



FUEL CAP

During this procedure do not use heat and keep sparks and naked flames well clear of the scooter. If the tank is left without the fuel level sensor fitted for a prolonged period, plug the hole to prevent the accumulation of petrol vapour in the workshop.

- Undo the screws (V3) and after opening the cap, undo the screw (V).

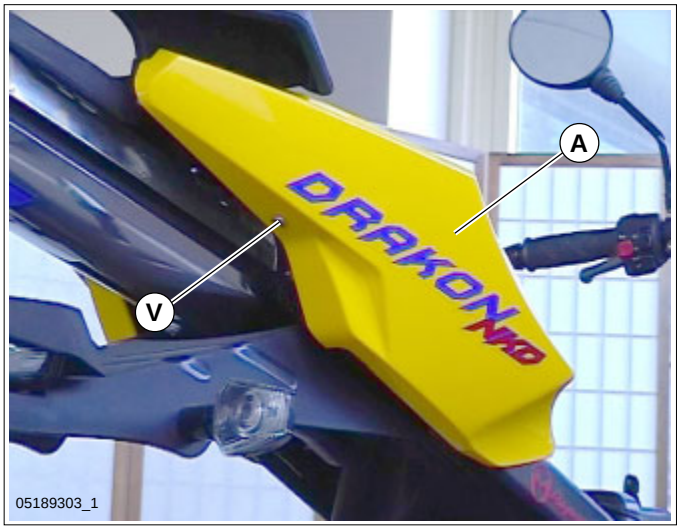


Pay attention to the arrangement of the screws (V3). Watch out for the reduction ring located under the cap.

LEFT AND RIGHT REAR FAIRING

- (Remove seat).
- Undo screws (V2)

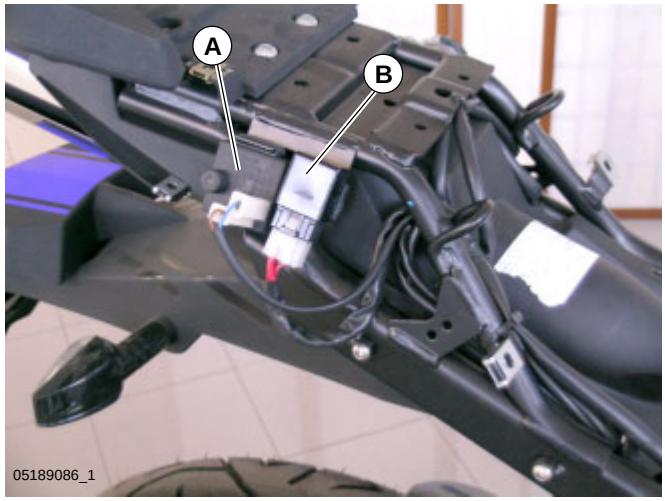
- Undo screw (V) then remove rear fairing (A) pulling towards rear of scooter.



ACCESSIBILITY

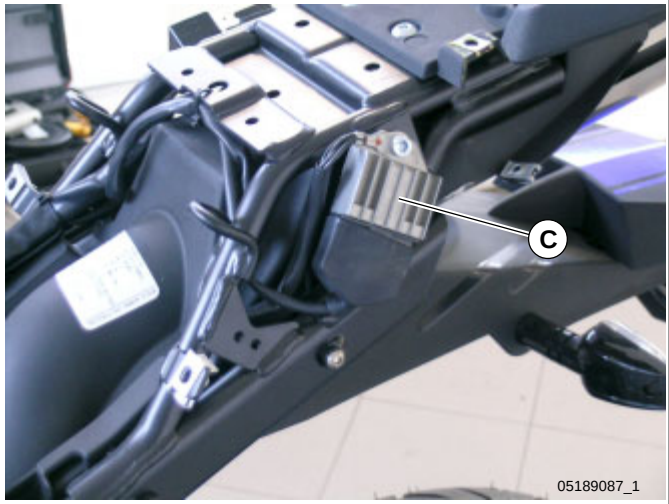
Removing the right-hand rear fairing provides access to the following components:

- flashing for turn indicators (A);
- starter motor relay (B).



Removing the left rear fairing provides access to the following components:

- voltage regulator (C).

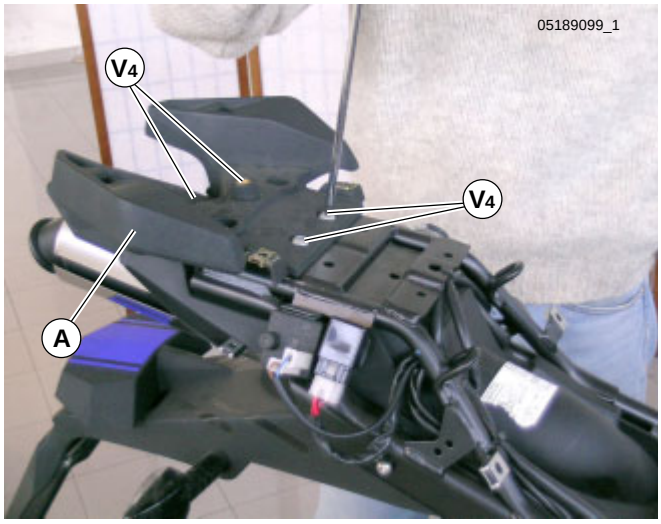


GRAB HANDLE

- (Remove seat).
- (Remove the right and left rear fairings).

- Undo screws (V4) and remove the grab handle.

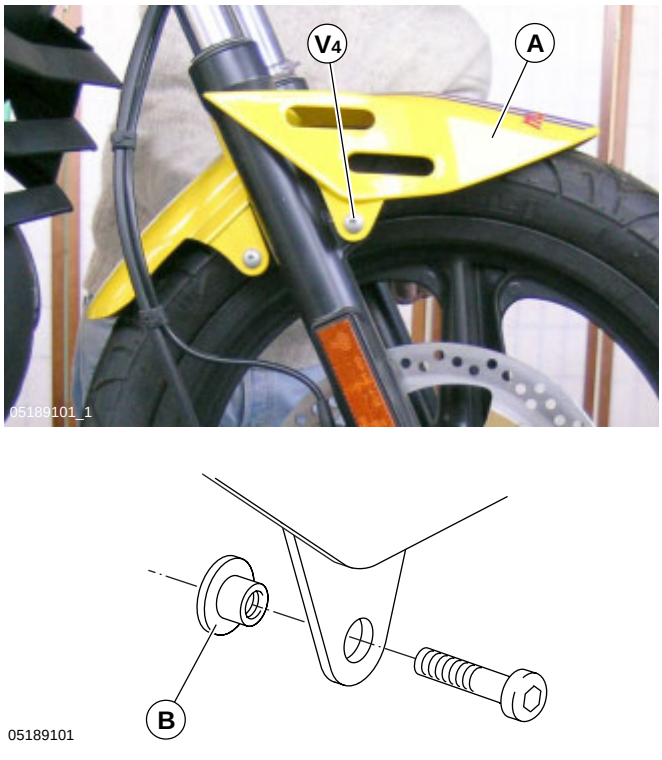
Pay attention to the four bushes located under the screws.



FRONT MUDGUARD

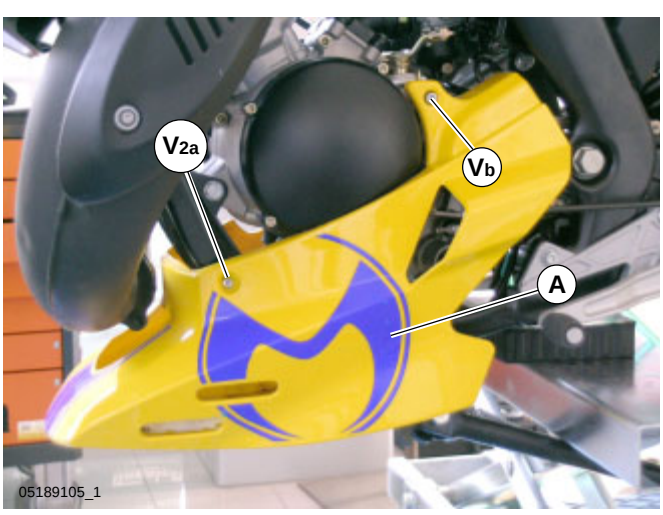
- Undo screws (V4) and remove mudguard (A).

Watch out for the four bushes (B) located under the mudguard; the two rear bushes are higher than the two front ones.



SUB PANEL

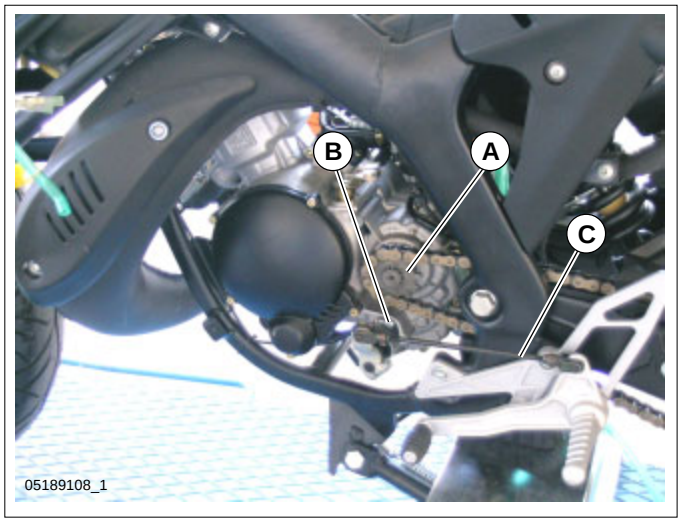
- Undo screws (V2a)
- Undo screw (Vb).
- Undo the screw (Vc), keeping the nut under it; then pull out the sub panel (A).



ACCESSIBILITY

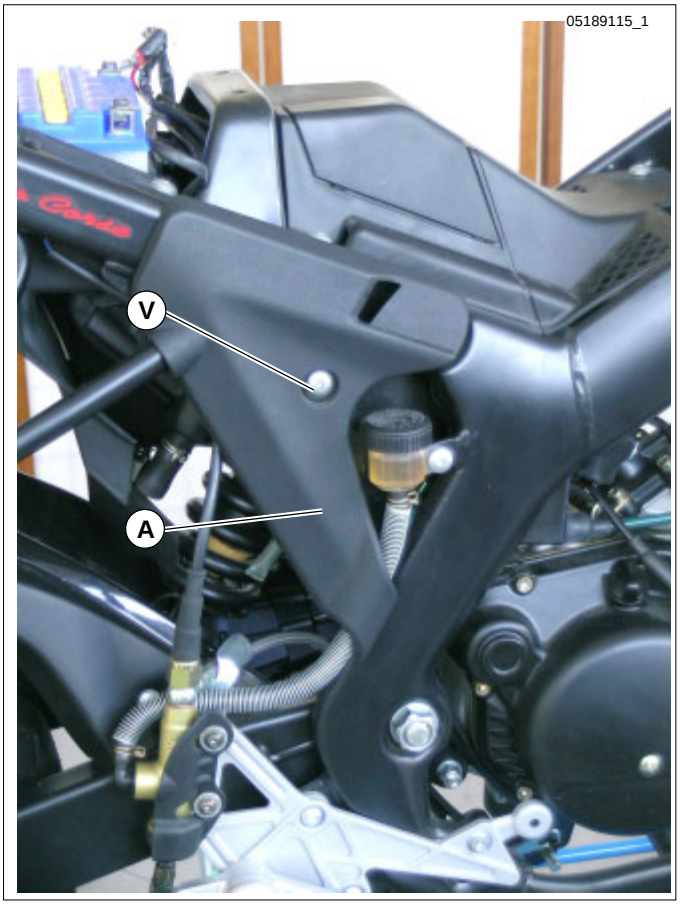
Removing the sub panel provides access to the following components:

- the pinion (A);
- “neutral” gear switch (B);
- the tension rod of the gear change pedal (C).



LEFT AND RIGHT SIDE PANEL

- Undo the screw (V) and remove the side panel (A).

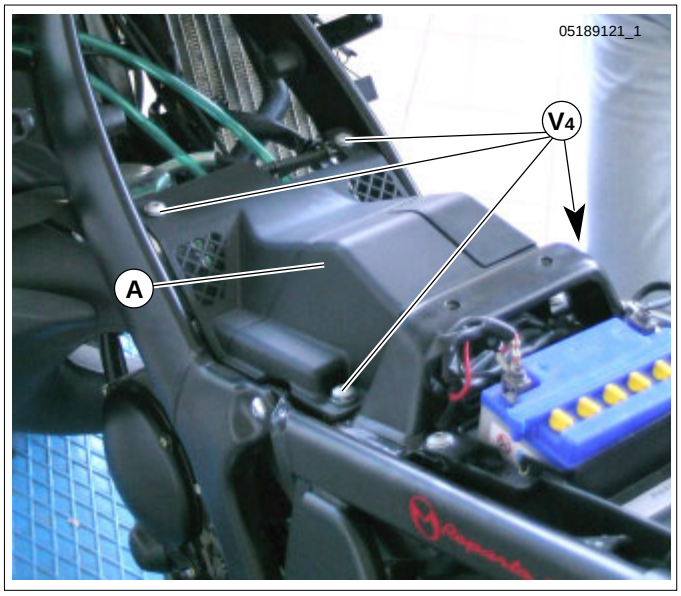


INTAKE BOX GUARD

- (Remove seat).
- (Remove fuel tank cover).
- (Remove fuel tank).

- Undo screws (V4) and remove guard (B).

Pay attention to the four bushes located under the screws.

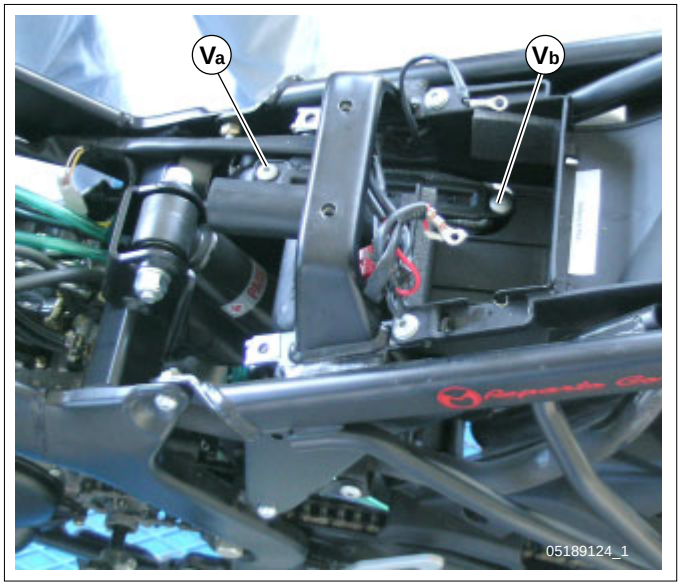


AIR FILTER

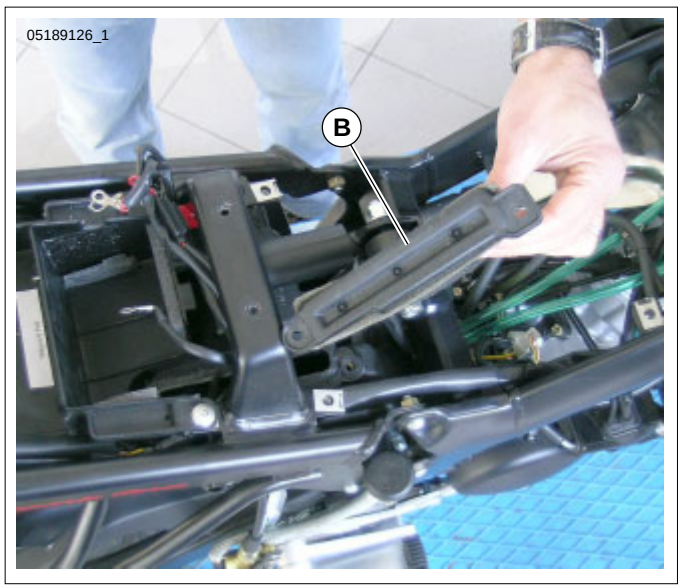
- (Remove seat).
- (Remove fuel tank cover).
- (Remove fuel tank).
- (Remove intake box guard).
- (Remove battery).

- Undo screws (Va) and (Vb).

The screw (Va) is LONGER than the screw (Vb) and during assembly it is inserted in the FRONT part of the filter.



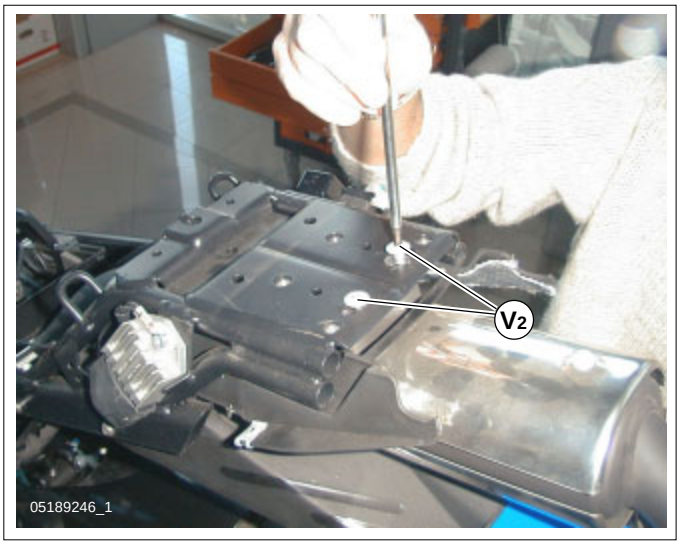
- Remove the filter (B), pulling it out towards the front of the scooter.



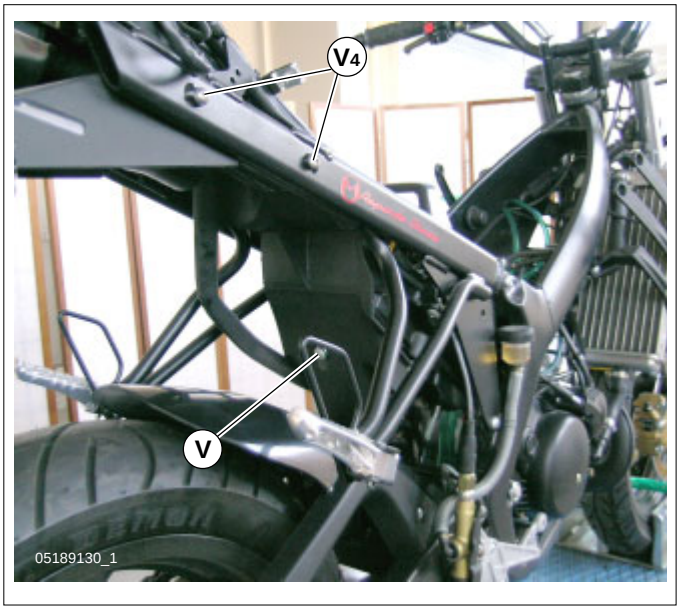
SHOCK ABSORBER COVER

- (Remove seat).
- (Remove the right and left rear fairings).
- (Remove grab handle).
- (Remove intake box guard).
- (Remove battery).

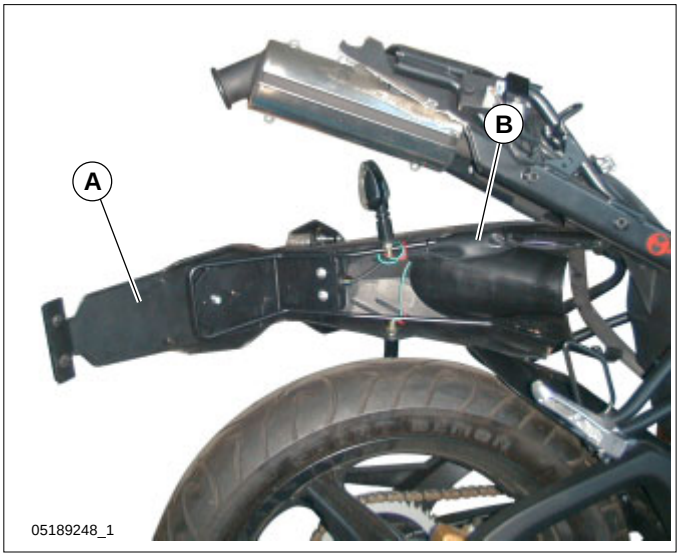
- Undo screws (V2)



- Undo screws (V4) and the screw (V).

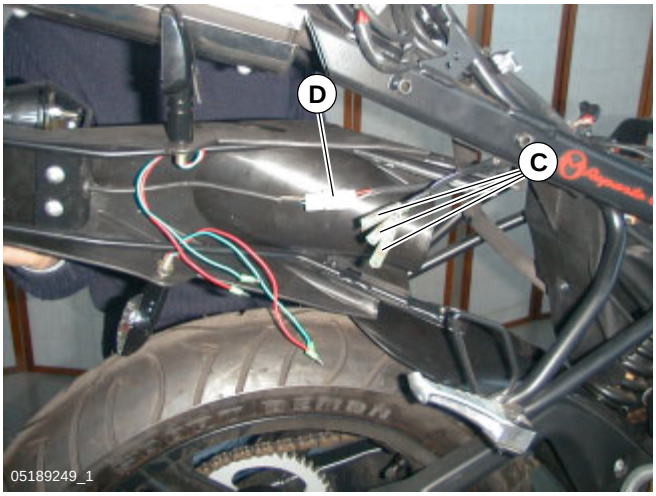


- Lower the number plate holder (A); then open the rubber protection (B).



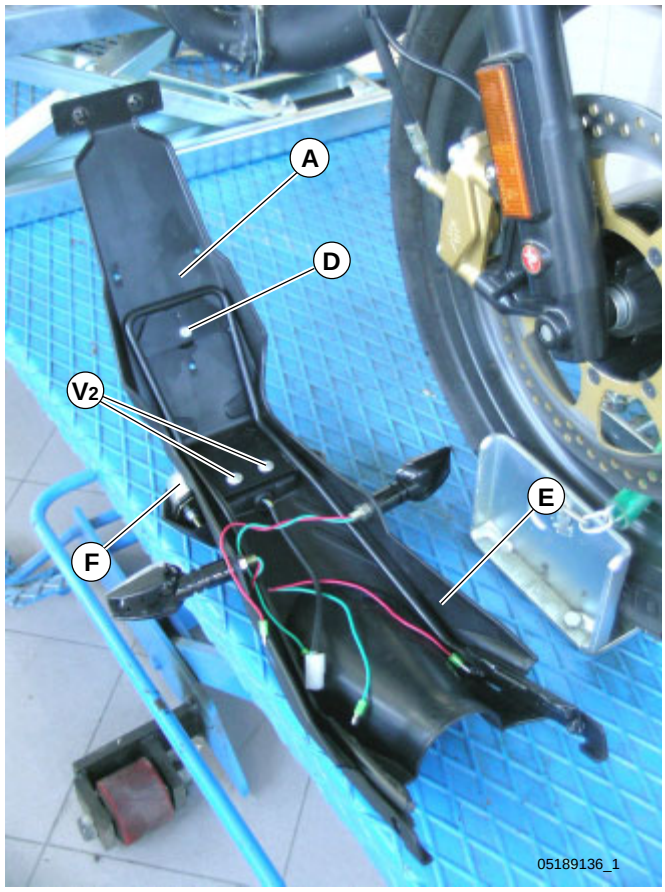
- Disconnect the connectors (C) of the turn indicators and the connector (D) of the taillight.

On the next reassembly the GREEN and BLACK cables are connected to the right turn indicator while the PURPLE and BLACK cables are connected to the LEFT indicator.

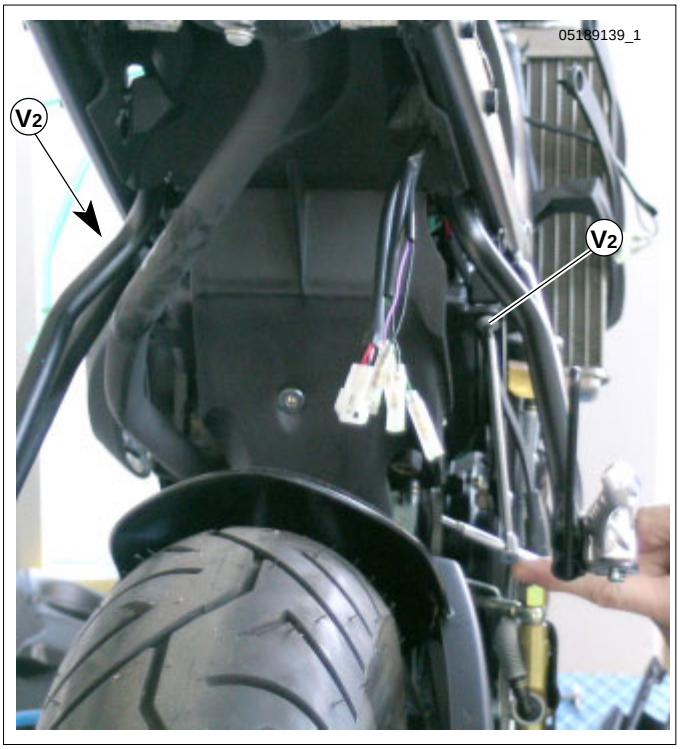


- Undo the screws (V2) and the nut (D), to remove the reinforcement strut (E) from the number plate holder (A).

NOTE ***Undoing the screws (V2), the taillight (F) also comes away.***

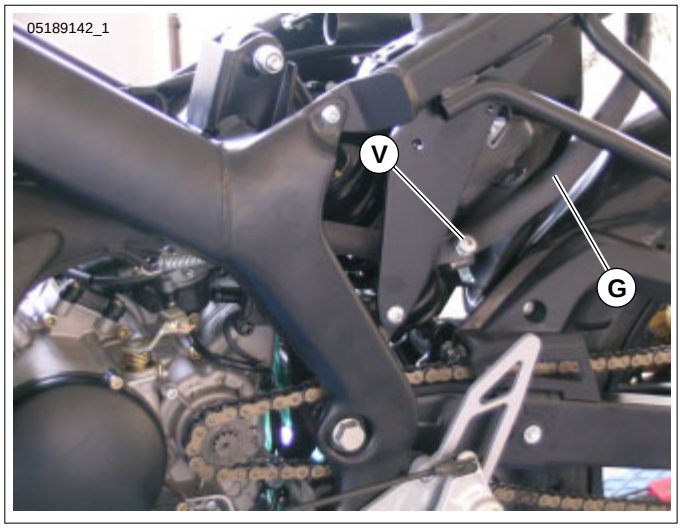


- Undo screws (V2)



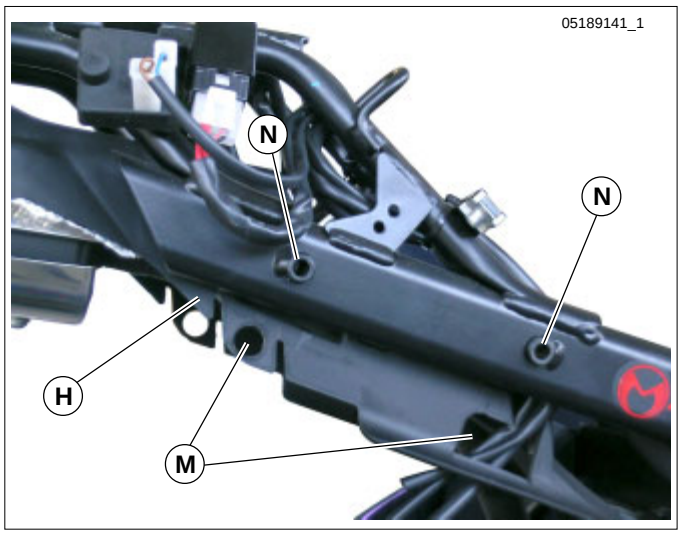
- Undo the screw (V) of the exhaust pipe (G).

Pay attention to the toothed washer located under the screw.



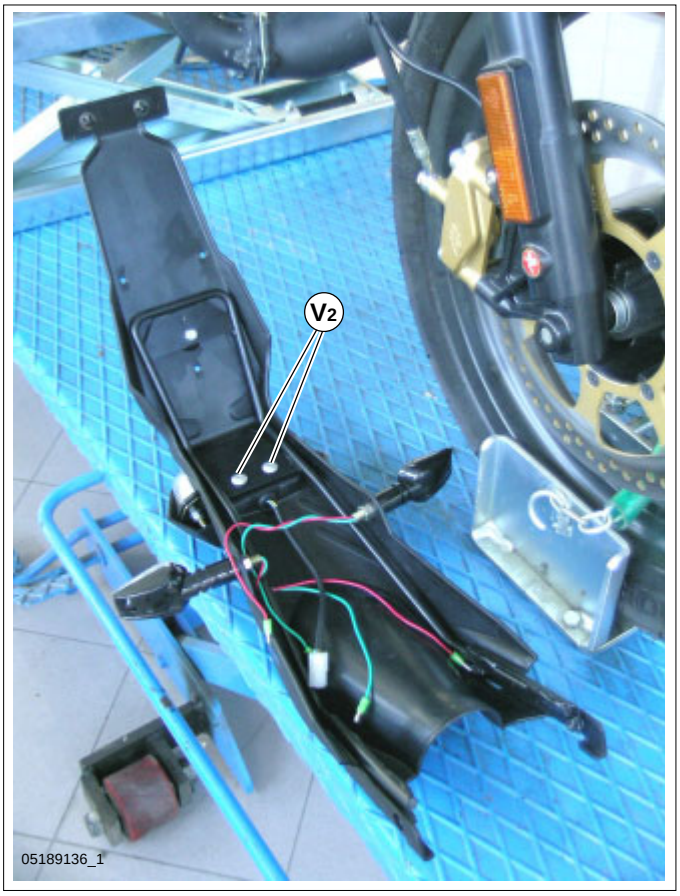
Lower the silencer of the exhaust pipe slightly; then disengage the shock absorber cover (H) from the rear frame (L), using leverage downwards and towards the inside of the scooter.

This operation is to disengage the housings (M) from the inside of the bushes (N).



REAR TAILLIGHT BULB

- Undo screws (V2)



- Undo the screws (V3), then the nuts (D2); then replace the bulb.

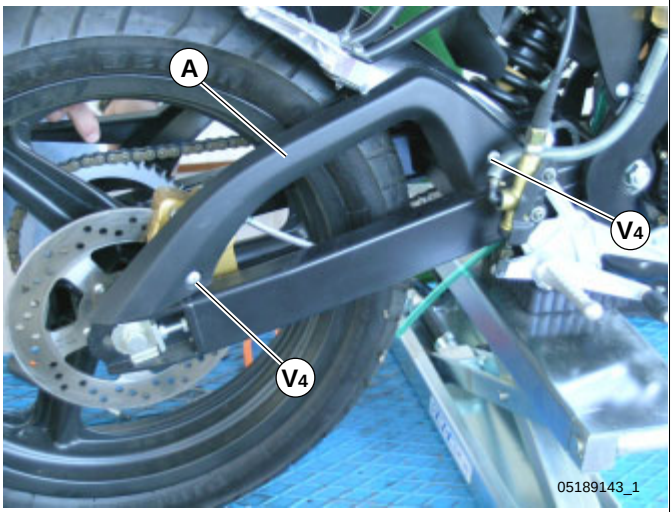
TURN INDICATOR BULB

- Undo screw (V) and remove glass.

REAR MUDGUARD

- Undo screws (V4) and remove the mudguard (A).

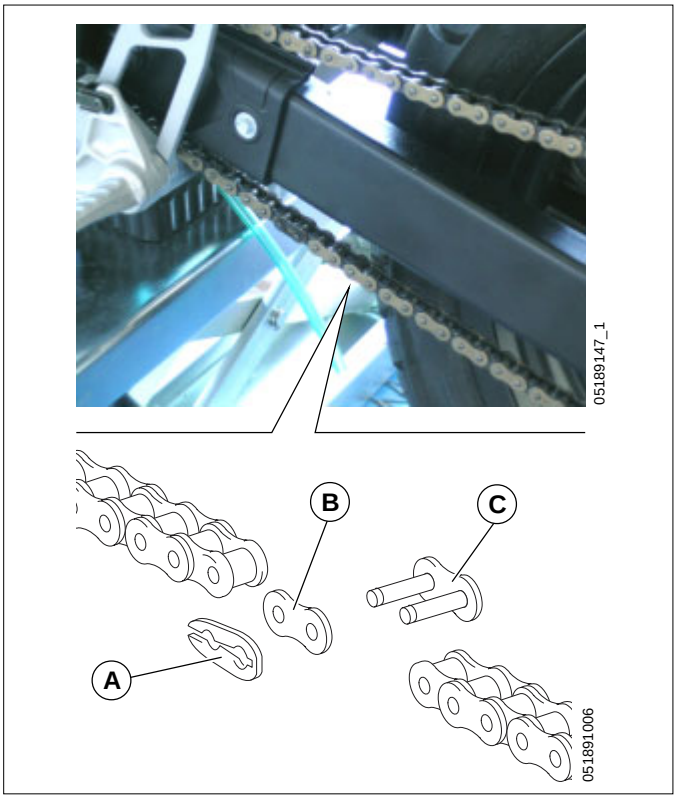
Pay attention to the four bushes located under the screws.



DRIVE CHAIN

- Remove the split pin (A); then the links (B) and (C); finally pull out the chain.

To tension the chain see “Gearing chain tension regulation”.



REAR SHOCK ABSORBER

Before disassembly, support the frame at the centre to prevent the scooter from falling.

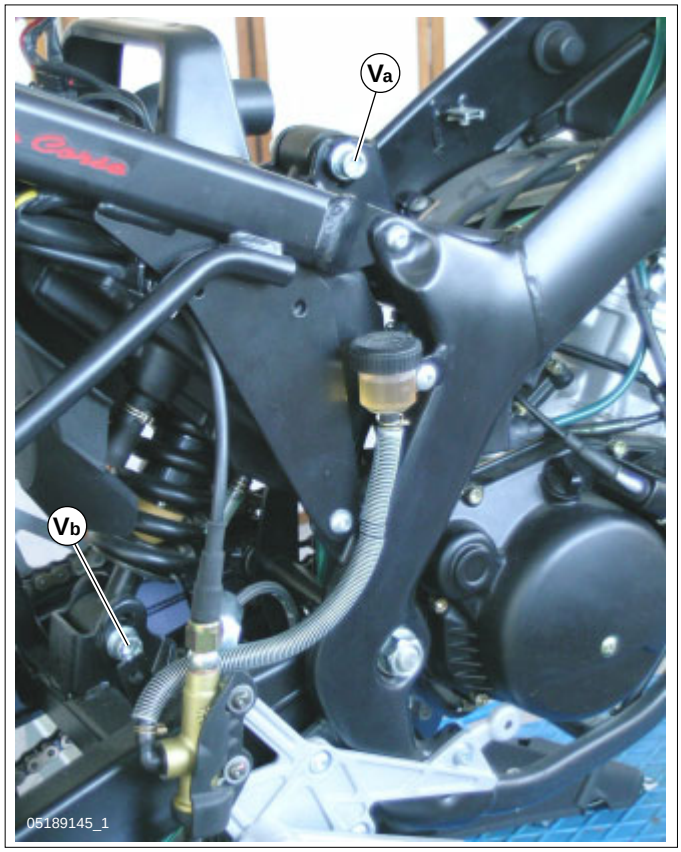
- (Remove seat).
- (Remove fuel tank cover).
- (Remove fuel tank).
- (Remove intake box guard).
- (Remove rear mudguard).
- First undo lower screw (Va); then upper screw (Vb).

	Cs-N*m
Va	45 ± 15%

	Cs-N*m
Vb	45 ± 15%

- Remove shock-absorber (A).

***NOTE** It is possible to insert the screw (Vb) in two different places, in order to set the height of the scooter.*



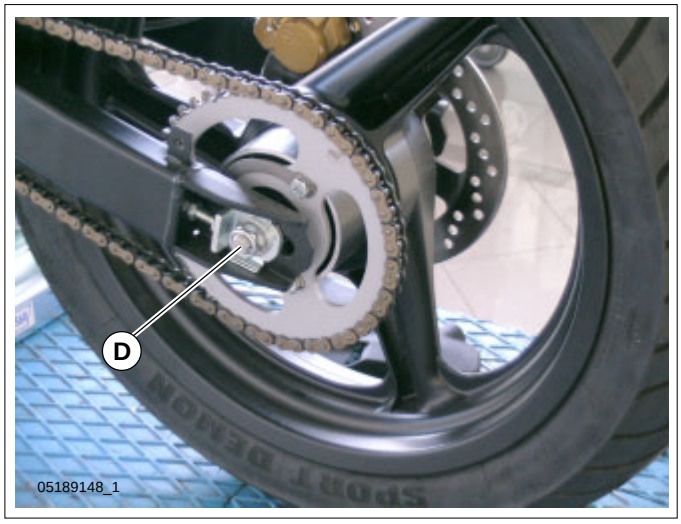
REAR WHEEL

- (Remove the gearing chain).

Before disassembly, support the frame at the centre to prevent the scooter from falling.

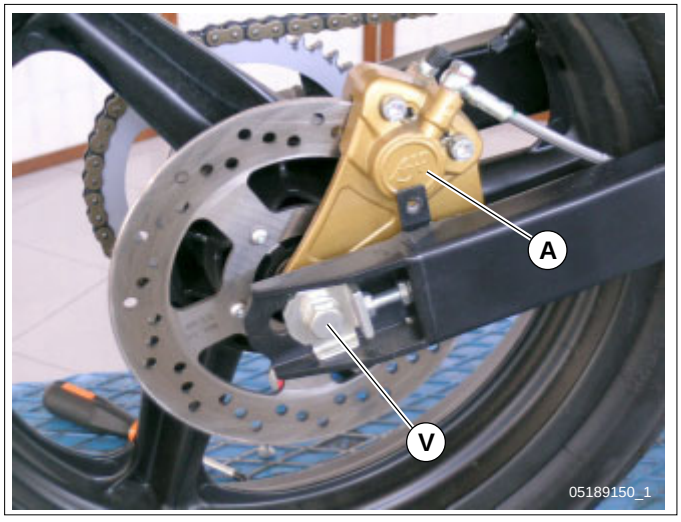
- Undo the nut (D).

	Cs-N*m
D	85 ± 10%

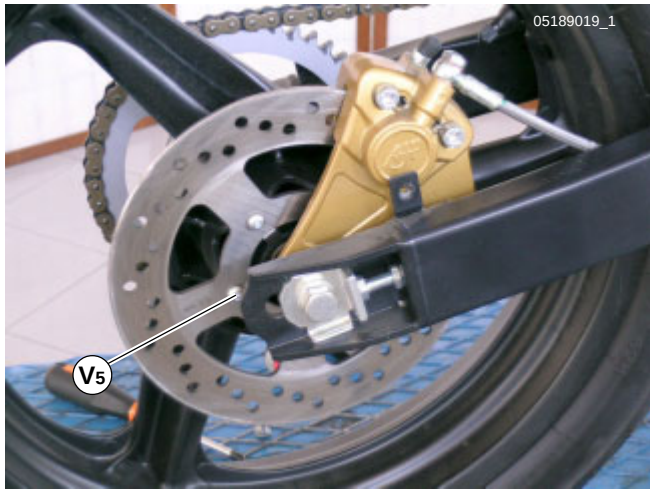


- Pull out the spindle (V); then remove the wheel.

***NOTE** The caliper (A) also functions as a spacer.*



REAR DISC



- (Remove rear wheel).

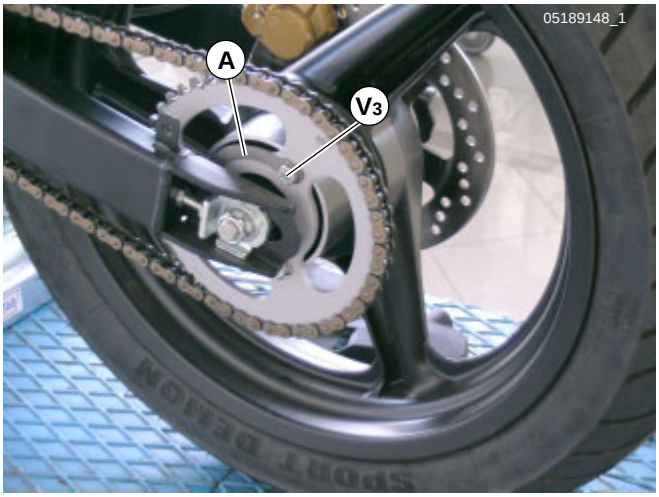
The thickness of the rear brake disc must NEVER be less than 3.5 mm; otherwise, RENEW THE DISC.

- Undo screws (V5).

When reassembling, use new screws and apply a high strength thread locker.

V5	Cs-N*m
	11 ± 10%

SPROCKET



- (Remove rear wheel).
- Unfold the wings of the flange (A); then undo the screws (V3).

When reassembling, once the screws have been tightened, fold down the wings of the flange again (A).

***NOTE** In the event that the scooter does not have a flange, request one from the "Malaguti" Spare Parts Service.*

REAR BRAKE CALIPER

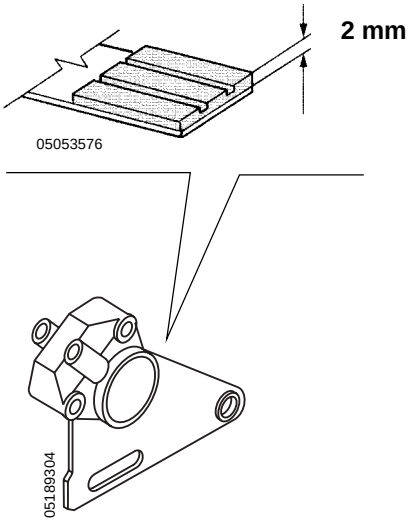
- (Remove rear wheel).
- Undo the screw of the hydraulic transmission (V) and remove the hydraulic transmission and its gaskets.

When reassembling, replace the gaskets of the hydraulic transmission.

	Cs-N*m
V	20 ± 10%

After having removed the hydraulic transmission and the caliper from its seat, place a recipient under it to collect the brake fluid. Dispose of used brake fluid in compliance with statutory legislation.

CHECK THE DISC AND PADS OF THE REAR BRAKE FOR WEAR



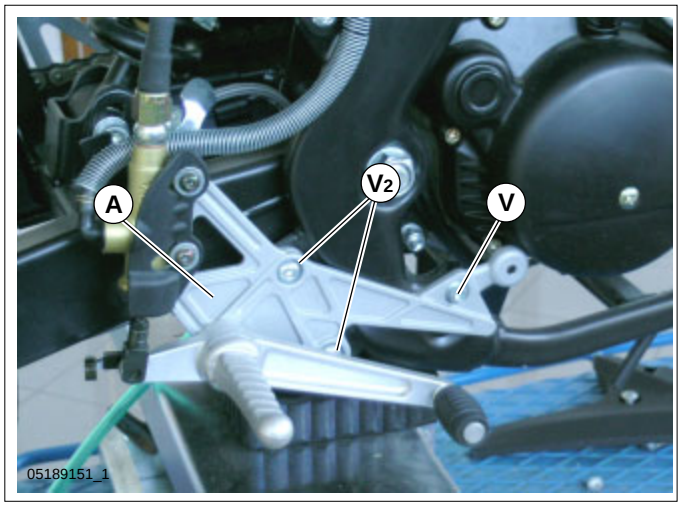
- Take the opportunity to check also wear of the brake disc.

  If the disc is badly damaged or the thickness less than **3.5 mm**, it must be renewed. Minimum thickness of the pads is **2 mm**.

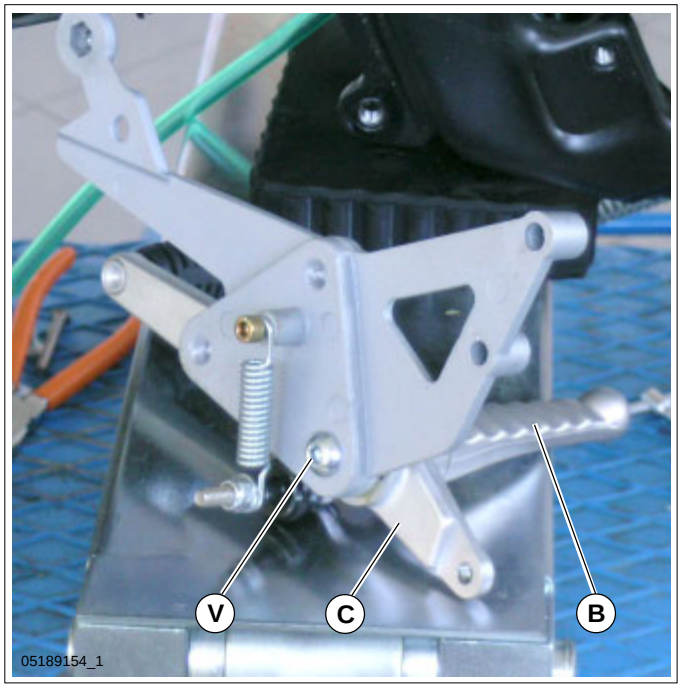
NOTE ***For overhauling the caliper see the specific chapter.***

FOOTREST ASSEMBLY - REAR BRAKE

- (Remove the sub-panel).
- (Remove rear brake master cylinder).
- Undo screws (V2) and the screw (V); then, remove the unit (A).

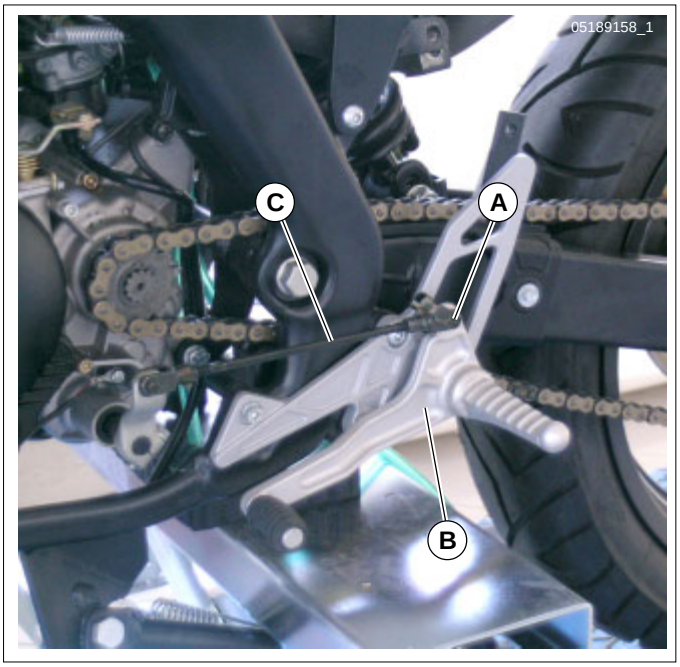


Undo the screw (V), to remove the footrest (B) and the brake pedal (C).



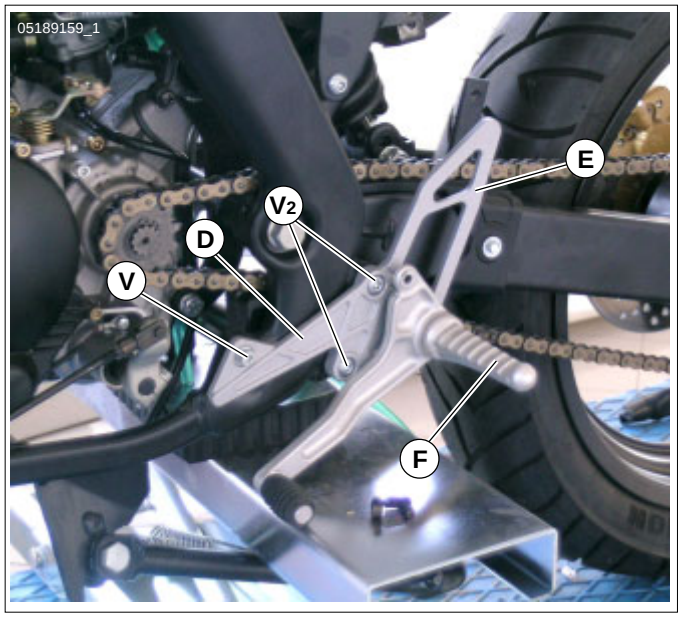
FOOTREST ASSEMBLY - GEAR CHANGE PEDAL

- (Remove the sub-panel).
- Disengage the spring (A) from the pedal (B), pull it out and invert the tension rod (C).



- Undo screws (V2) and the screw (V); then, remove the unit (D).

To remove the footrest (E) and the gear pedal (F) use Table A of the Spare Parts Catalogue.



FILTER BOX

- (Remove seat).
- (Remove intake box guard).
- (Remove rear mudguard).

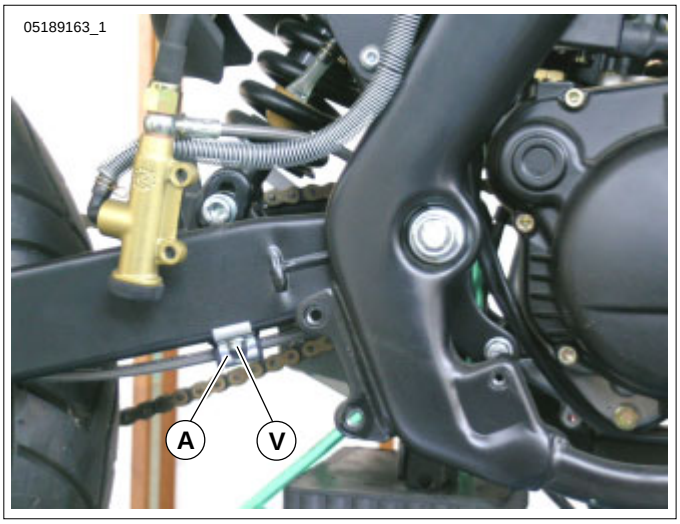
Removing the box can be understood from Table I of the Spare Parts Catalogue.

SWING ARM

Before disassembly, support the frame at the centre to prevent the scooter from falling.

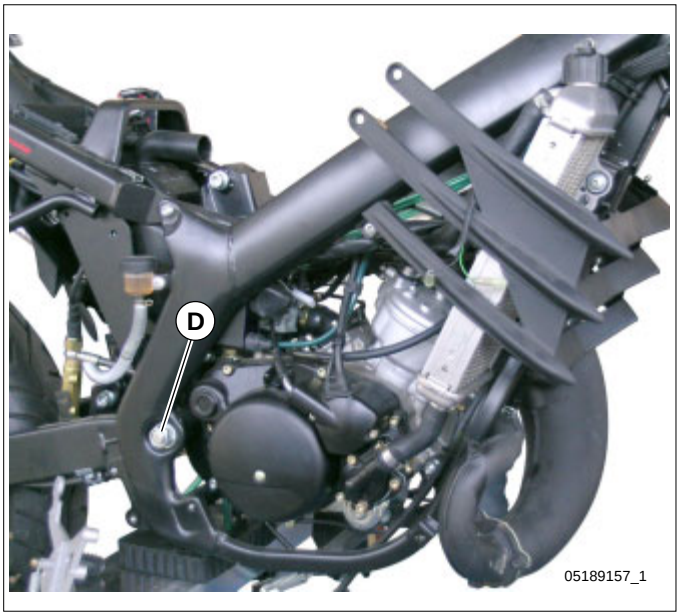
- (Remove the chain).
- (Remove rear wheel).
- (Remove rear mudguard).
- (Remove the footrest assembly – brake pedal).

- Disengage the rear shock absorber downwards.
- Remove the screw (V) and remove the clamp (A).

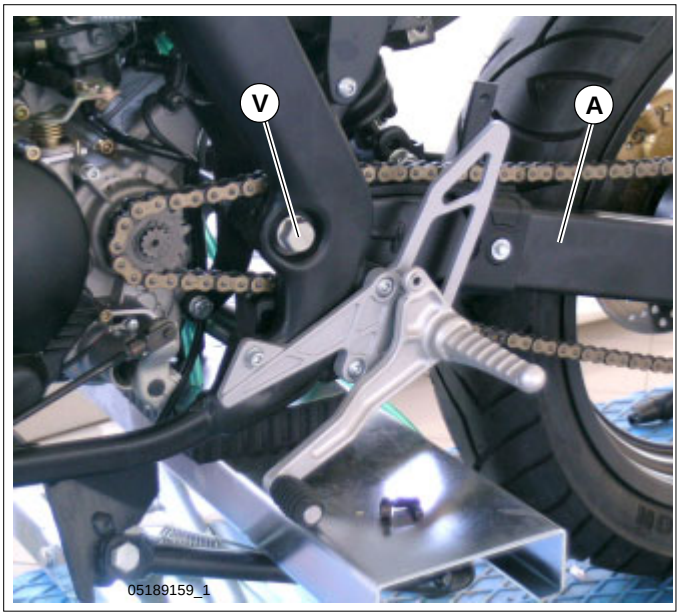


- Undo the nut (D).

D	Cs-N*m
	60 ± 10%



- Pull out the screw (V); then pull out the fork (A).



REAR FRAME

Before disassembly, support the frame at the centre to prevent the scooter from falling.

- (Remove seat).
- (Remove fuel tank cover).
- (Remove fuel tank).
- (Remove grab handle).
- (Remove battery).
- (Remove the right and left rear fairings).
- (Remove intake box guard).
- (Remove the right and left number plate holder).
- (Remove the cover from the intake box).
- (Remove silencer).
- (Remove the chain).
- (Remove rear wheel).
- (Remove rear mudguard).
- (Remove the fork).

- Undo screws (V4) and remove the rear frame (A).

NOTE Recover the nuts located under the screws.

	Cs-N*m
V4	20 ± 15%

SPEEDOMETER SENSOR

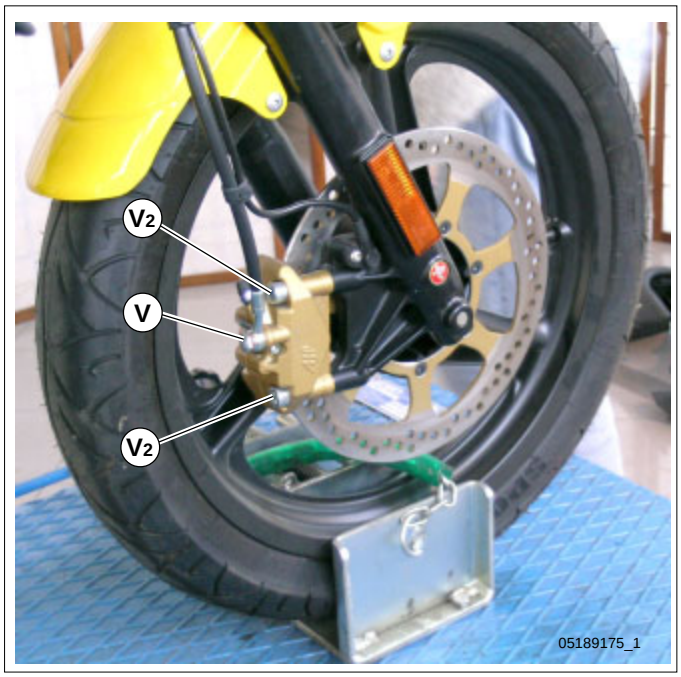
- Undo screw (V) ensuring the spacer does not fall.

When refitting, use a feeler gauge to check that the sensor - disc gap is 1÷2 mm.

	Cs-N*m
V	10 ± 15%

- Remove the sensor complete with the transmission.

FRONT BRAKE CALIPER



- Undo the screw of the hydraulic transmission (V) and remove the hydraulic transmission and its gaskets.

When reassembling, replace the gaskets of the hydraulic transmission.

V	Cs-N*m
	20 ± 10%

- Undo screws (V2) and free the complete caliper.

After having removed the hydraulic transmission and the caliper from its seat, place a recipient under it to collect the brake fluid. Dispose of used brake fluid in compliance with statutory legislation.

V2	Cs-N*m
	30 ± 20%

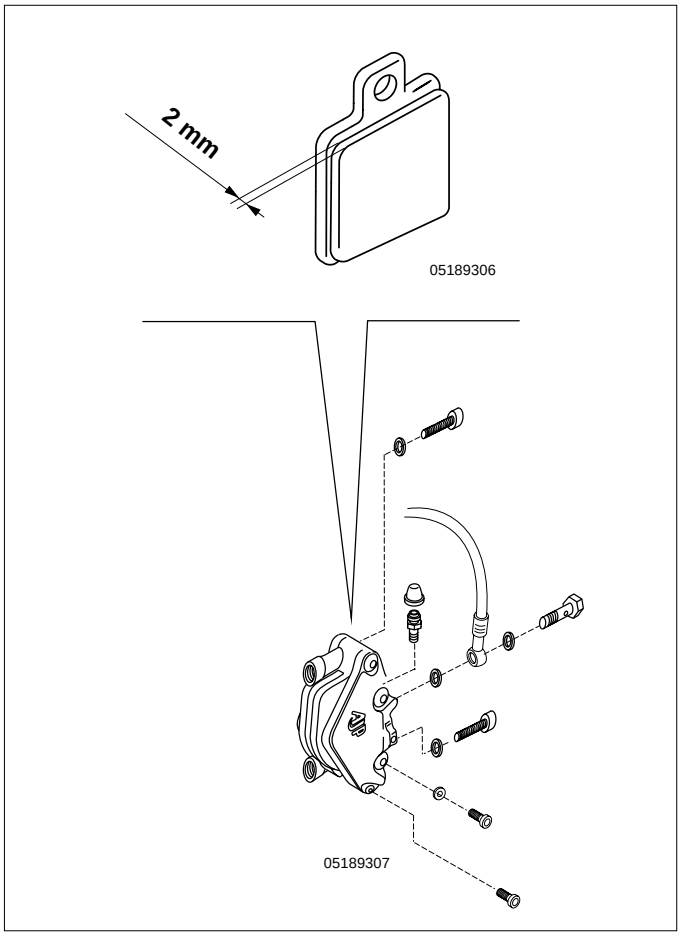
CHECKING FRONT BRAKE WEAR

- Take the opportunity to check also wear of the brake disc. If they are scored or unevenly worn, they can be reground.

  If disc thickness has worn to less than **3.5 mm** the discs must be changed.

Minimum thickness of the pads is 2 mm.

NOTE** **For overhauling the caliper see the specific chapter.



FRONT WHEEL

Before disassembly, support the frame at the centre to prevent the scooter from falling.

- (Remove speedometer sensor).
- (Remove front brake caliper).
- Loosen screw (V).
- Unscrew and remove wheel spindle (A), paying attention to spacer (B).

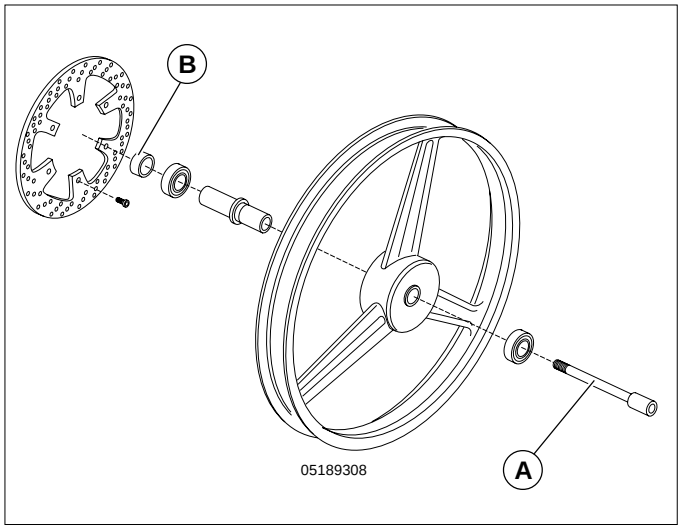
	Cs-N*m
V	20 ± 15%

	Cs-N*m
A	45 ± 15%

- Remove wheel assembly.

Do not operate the brake lever after removing the wheel, since the pads would come into contact with each other.

When refitting the wheel be sure to refit the spacer (B) and grease spindle (A).



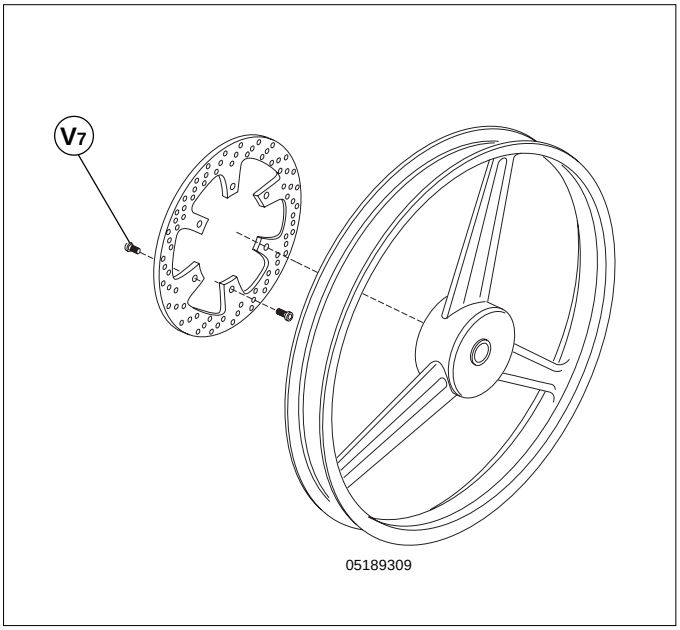
FRONT BRAKE DISC

- (Remove speedometer sensor).
- (Remove front brake caliper).
- (Remove front wheel).
- Undo screws (V7).

Wear tolerance limit = mm 3, 5

When reassembling, use new screws and apply a high strength thread locker.

	Cs-N*m
V7	11 ± 10%



FRONT DAMPER

LEFT

- (Remove mudguard).
- (Remove wheel).

RIGHT

- (Remove mudguard).
- (Remove wheel).
- (Remove brake caliper).
- (Remove odometer pick-up).

Before disassembly, support the frame at the centre to prevent the scooter from falling.

To proceed with the operation, position the brake caliper and brake line BEHIND the scooter frame.

- Undo screws (V3)
- Remove damper tube (B) downwards by pulling and twisting.

V3	Cs-N*m
	30 ± 20%

To overhaul the hydraulic unit proceed as follows:

- unscrew plug (C) and then turn the shock absorber upside down and drain the oil contents into a 1 litre container;
- undo screw (V) and remove damper (D) from slider (E).

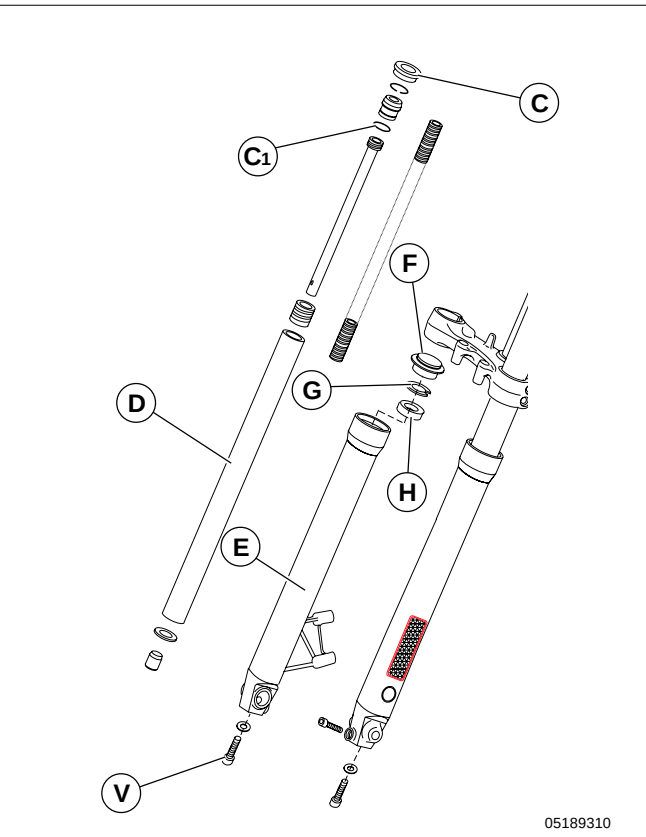
***NOTE** When reassembling renew copper washer under screw (V).*

- remove wiper seal (F), retaining ring (G) and oil seal (H).

There is an O-ring (C_1) located on cap (C); renew the O-ring if necessary.

The damper contains oil. Do not turn it upside down or tilt it excessively during the removal procedure or when removing its internal components. Hydraulic fluid is corrosive and can cause serious personal injury.

***NOTE** The sequence of operations for disassembling the damper can be identified clearly in the replacement parts exploded view.*

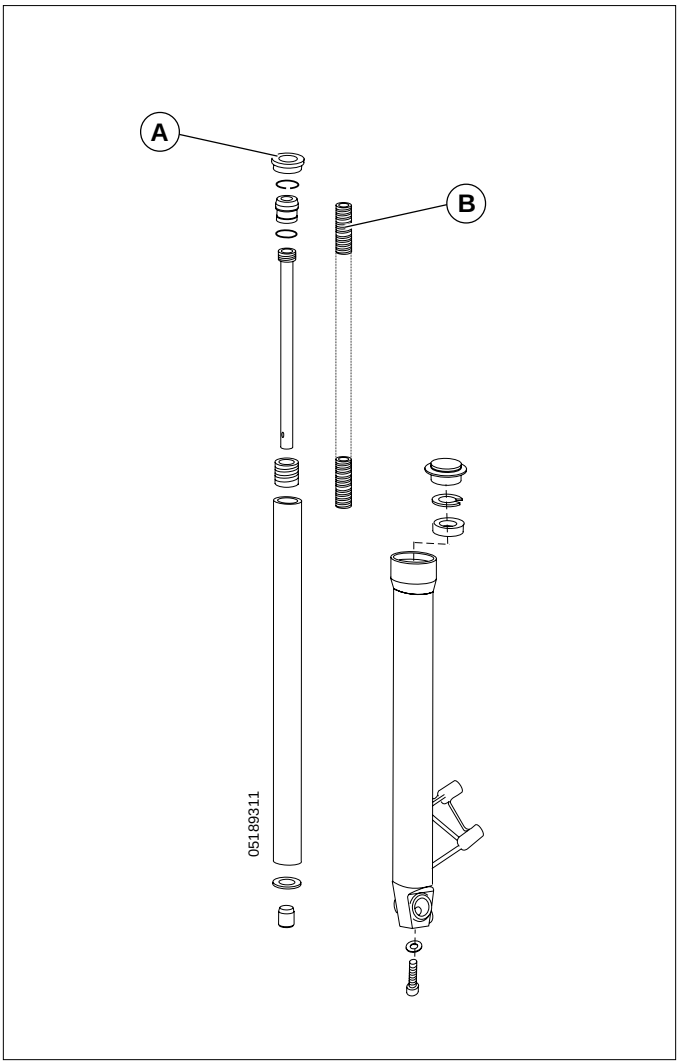


CHECKING THE OIL LEVEL IN THE DAMPER

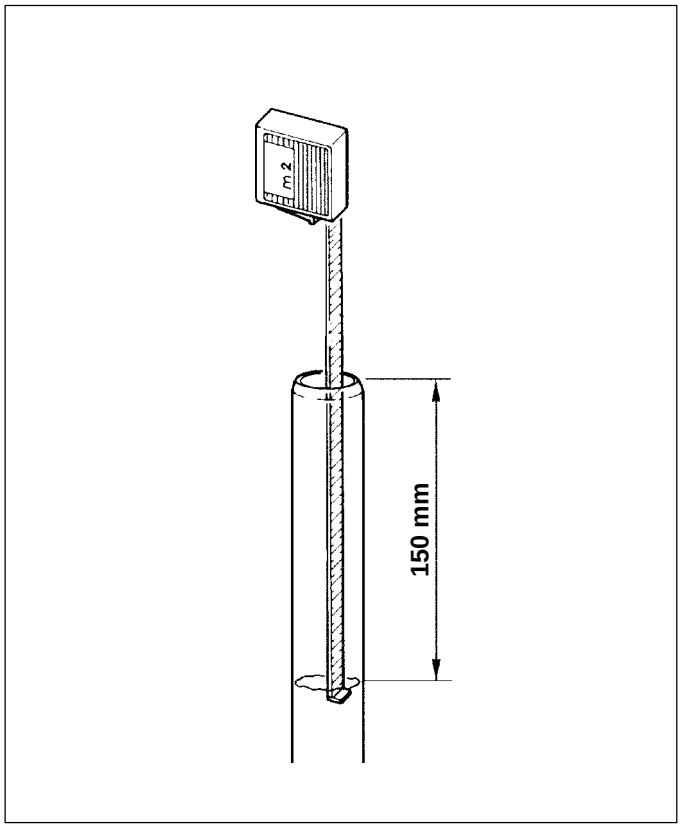
If the front suspension bottoms out or makes anomalous noises, check the oil level in the dampers as follows:

- undo upper plug (A);
- carefully remove spring (B) and allow the oil in which it was immersed to drip off;
- bring the damper to its bottom travel limit while keeping it in a perfectly vertical position.

Quantity of oil for damper 310 cc



- With the aid of a rule or a gauge rod, check the oil level. The correct level is **150 mm** from the upper edge of the damper.
- Top up with **Q8 FORK OIL** if necessary.

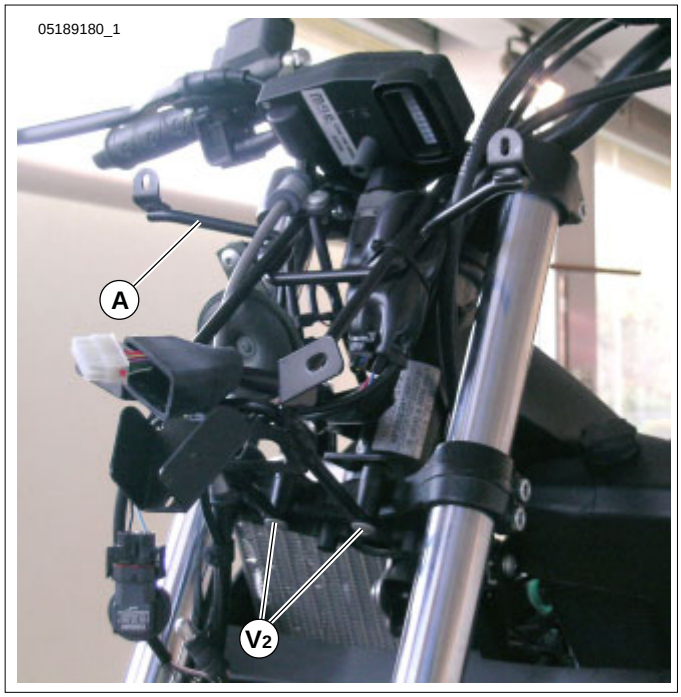


FRONT FORK

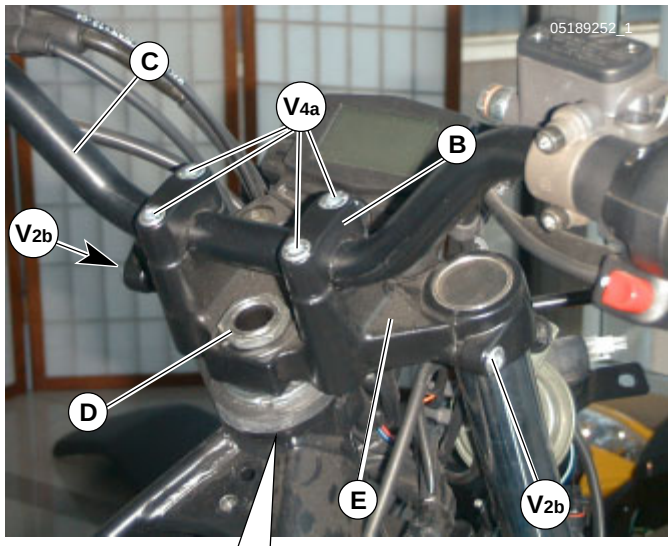
Before disassembly, support the frame at the centre to prevent the scooter from falling.

- (Remove the headlight guard).
- (Remove the digital instrument panel).

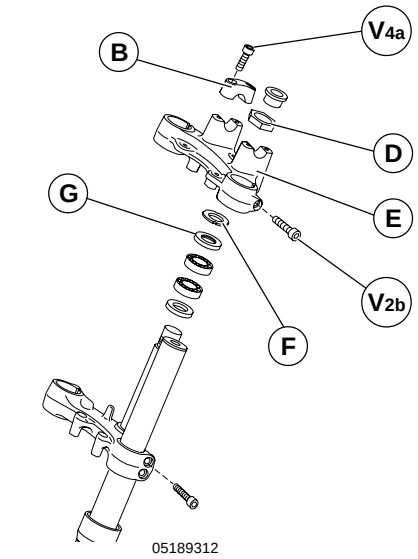
- Undo screws (V2) and remove support (A).



- Undo screws (V4a), remove U clamps (B) and handlebar (C).
- Unscrew the nut (D) and the screws (V2b); then pull out the upper bar (E).



- Unscrew the ring nut (F), pull out the dust guard (G); then pull out the entire fork downwards.



	Cs-N*m
V4a	21 ± 15%

	Cs-N*m
V2b	21 ± 15%

	Cs-N*m
D	30 ± 15%

RADIATOR

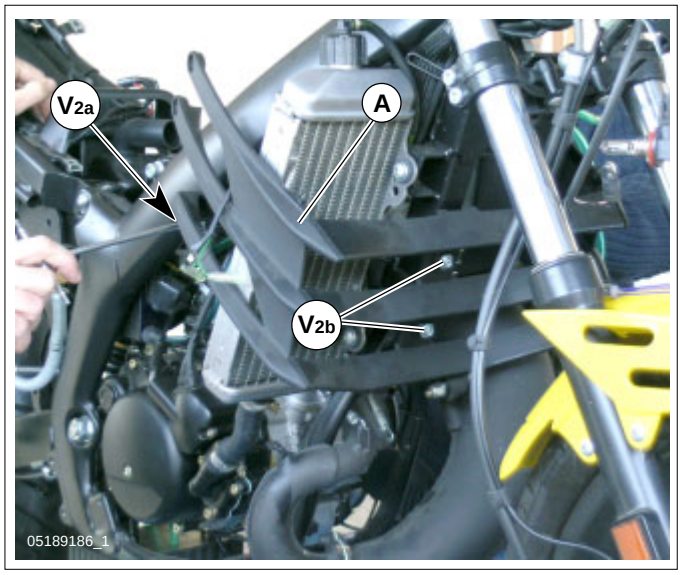
- (Remove seat).
- (Remove fuel tank cover).
- (Remove fuel tank).

DANGER OF BURNS!

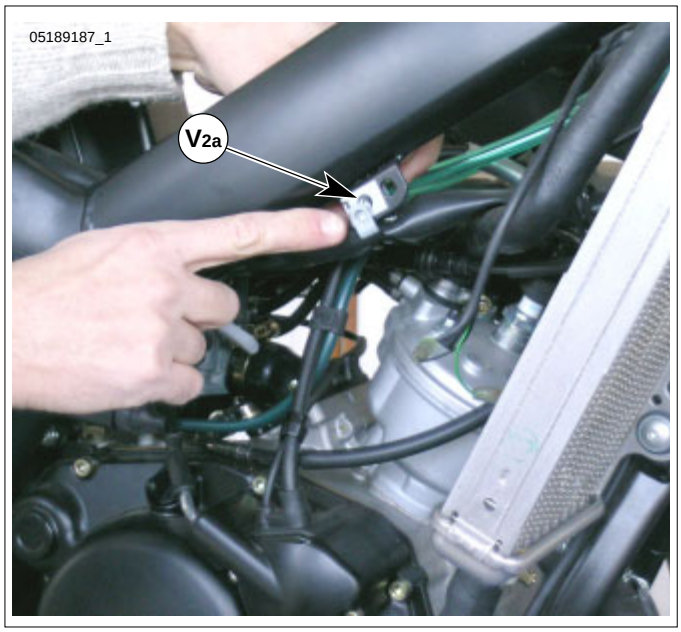
Before proceeding, make sure that the coolant temperature is lower than 50 °C.

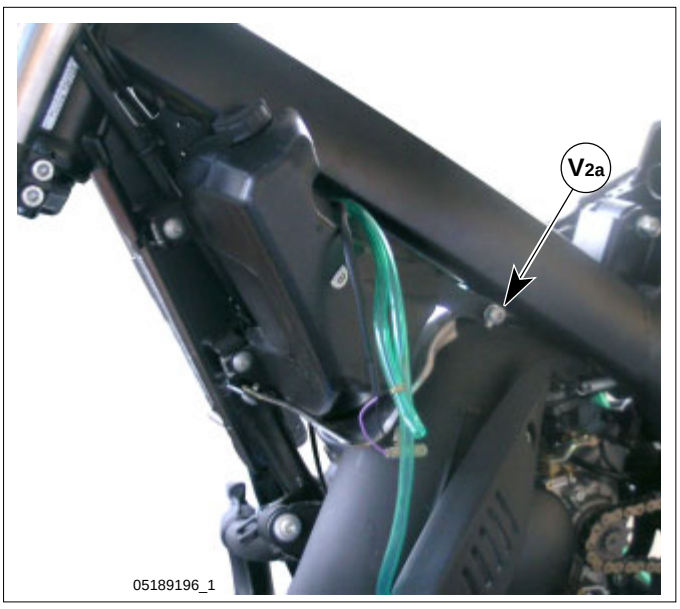
- Undo screws (V2a)
- Undo screws (V2b) and remove grille (A).

Recover the bushes located under the screws (V2b).



Under the screw (V2a) on the right side there is a cable gland, while the screw (V2a) on the left side holds the oil tank; when reassembling make sure to replace screws correctly.



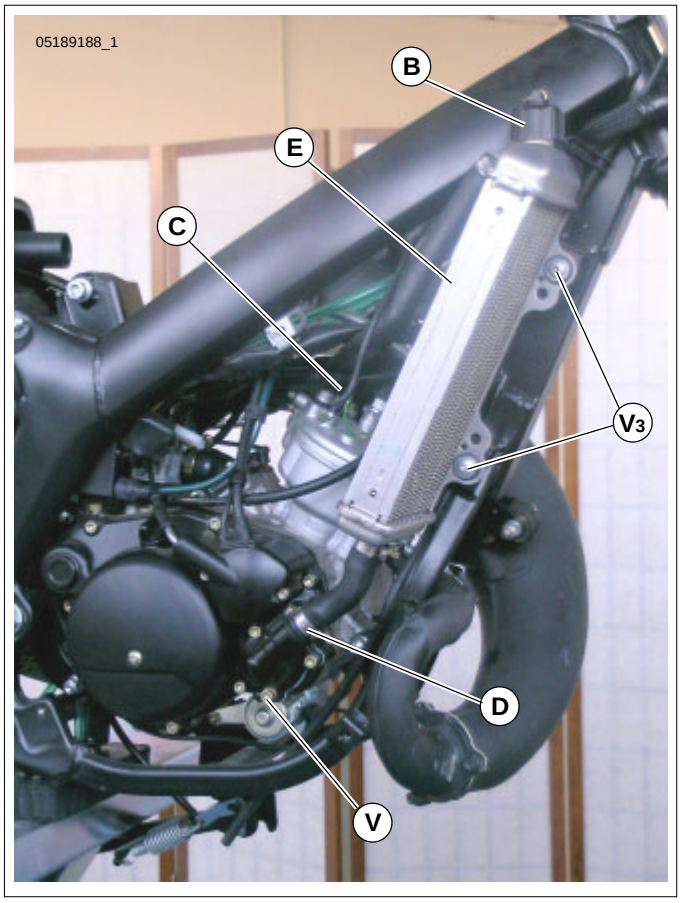


- Remove radiator cap (B).
- Place a 5 l recipient under the scooter.
- Remove screw (V) and wait for ALL the coolant to flow out.

When refitting screw (V) renew the copper washer.

NOTE** **When reassembling, follow the procedure outlined at the end of the heading.

- Loosen the clamps (C) and (D) and pull out the rubber tubes.
- Undo screws (V3) and remove the radiator (E).



RADIATOR

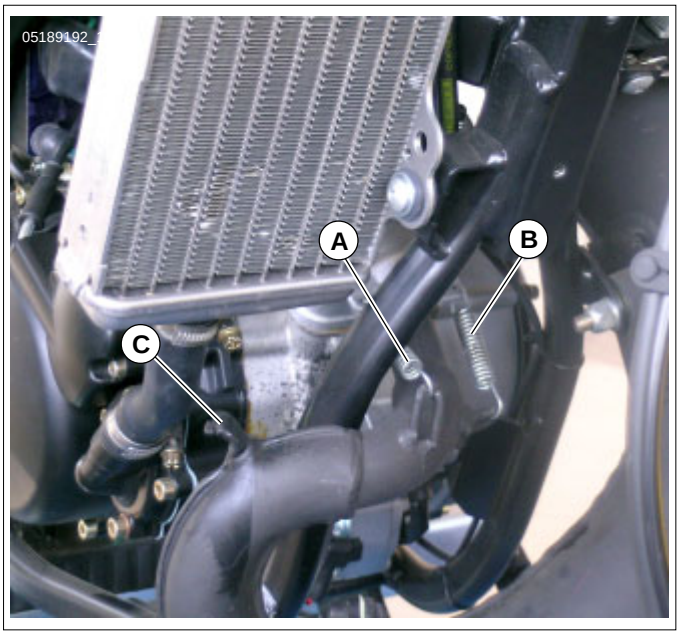
After having refitted the radiator and filled the cooling system by pouring coolant into filler point (A), bleed air from the system as follows: start the engine and idle for a few minutes then stop it, check the radiator liquid level again and if necessary top up again.

MUFFLER

- (Remove seat).
- (Remove the right and left rear fairings).
- (Remove grab handle).
- (Remove the shock absorber cover).

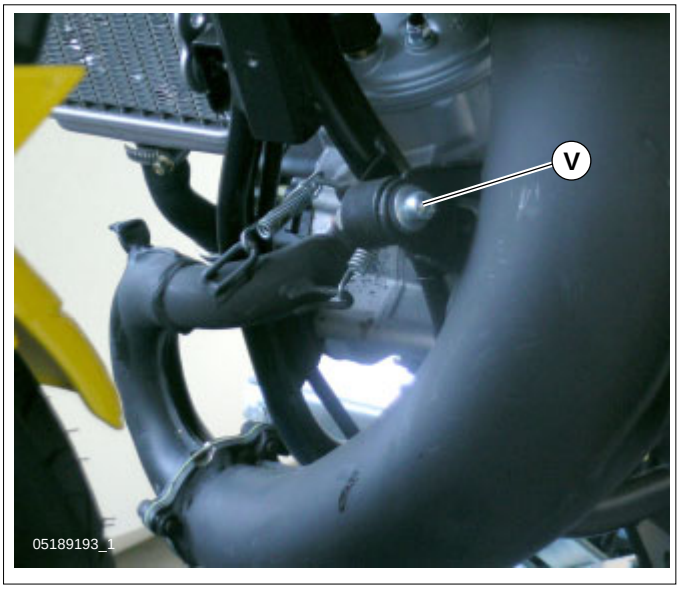
Before working on the silencer and the exhaust manifold wait until all the component shave cooled down and always wear suitable protective gloves.

- Detach the two springs (A) and (B).
- Pull out the rubber tube from the metal tube (C).



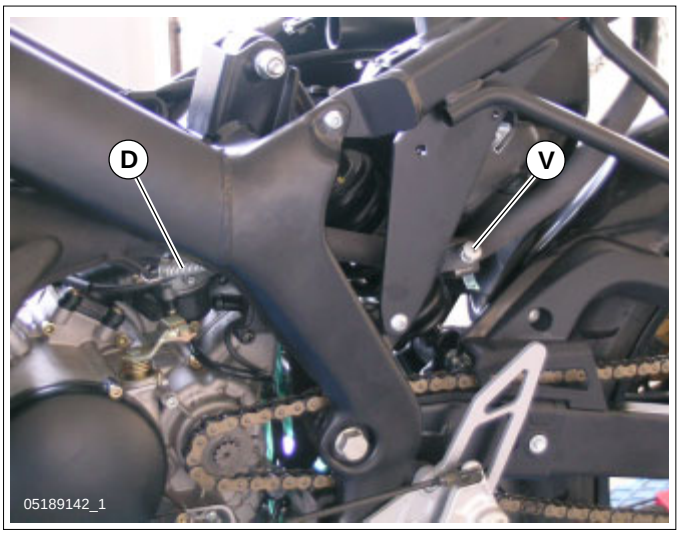
- Undo screw (V).

V	Cs-N*m
	8 ± 10%

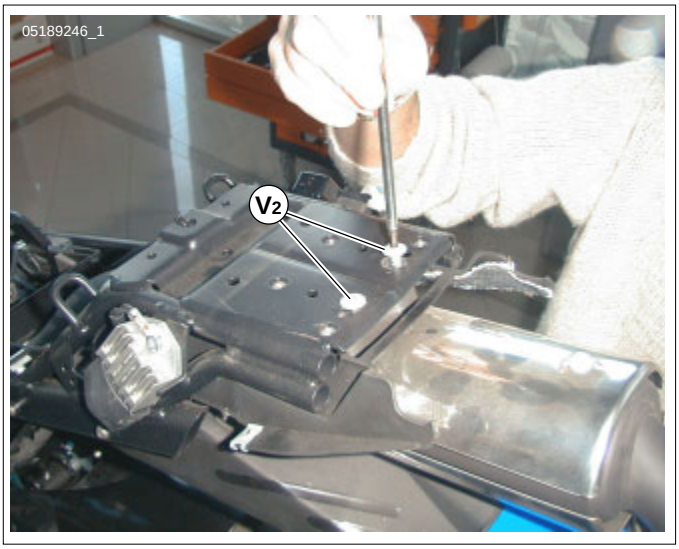


- Disengage the spring (D) and undo the screw (V).

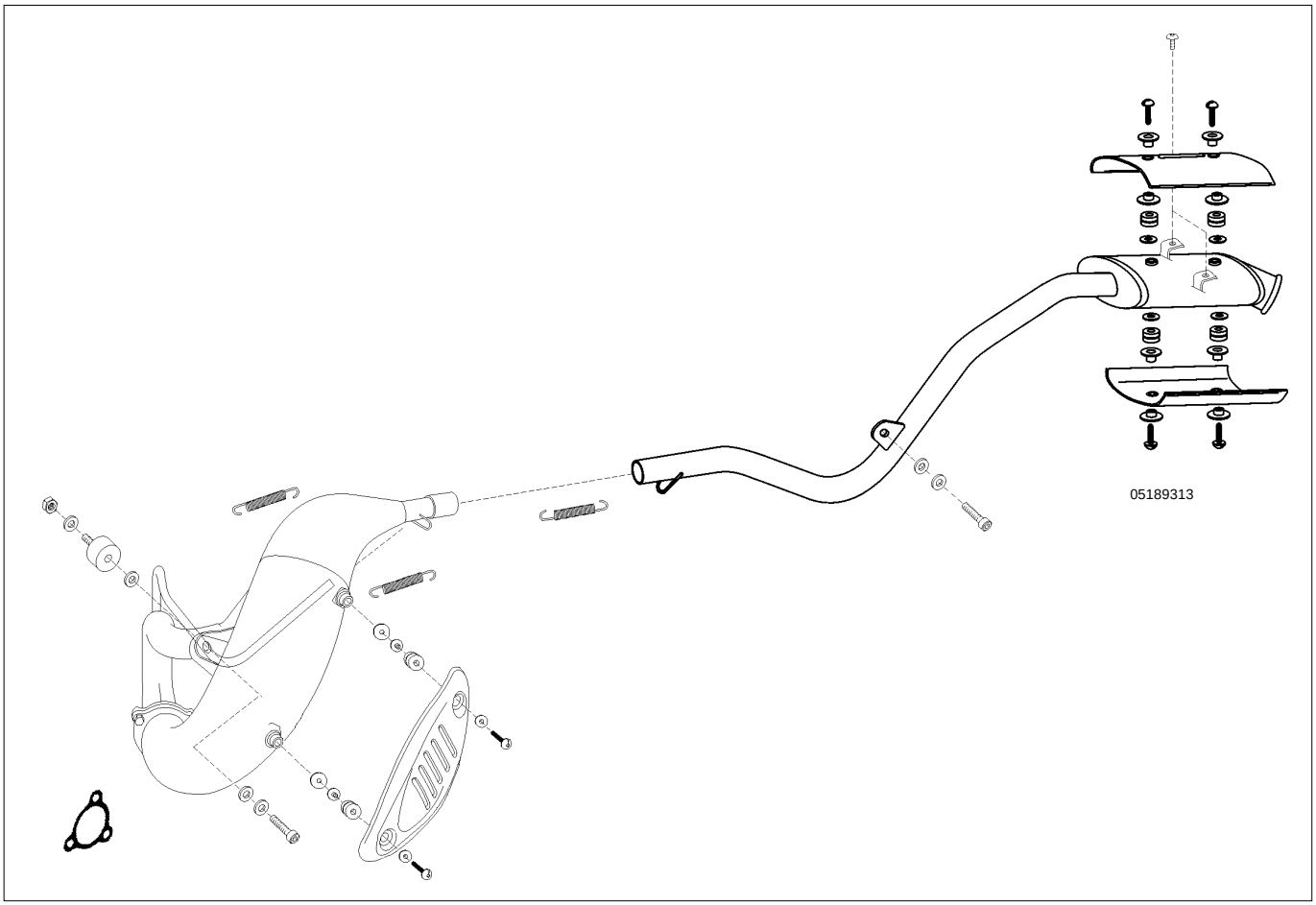
Pay attention to the toothed washer located under the screw.



- Undo the screws (V2); then remove the entire silencer.



The procedure for disassembling the components of the exhaust unit is illustrated in the figure.

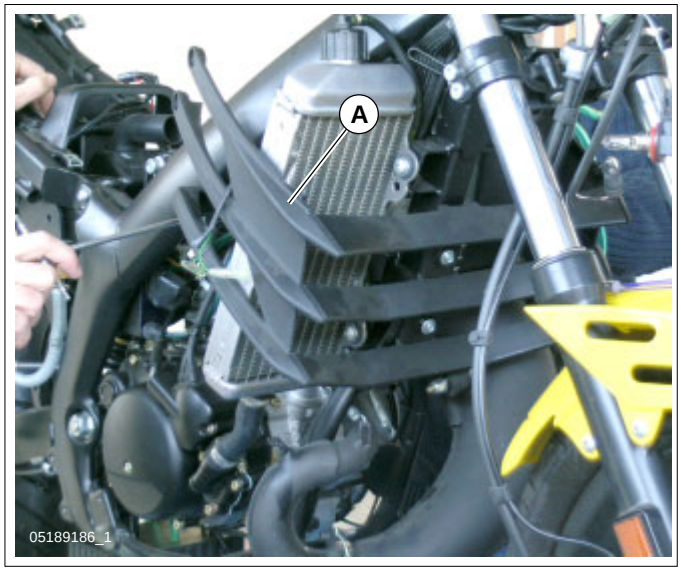


OIL TANK

- (Remove seat).
- (Remove fuel tank cover).
- (Remove fuel tank).

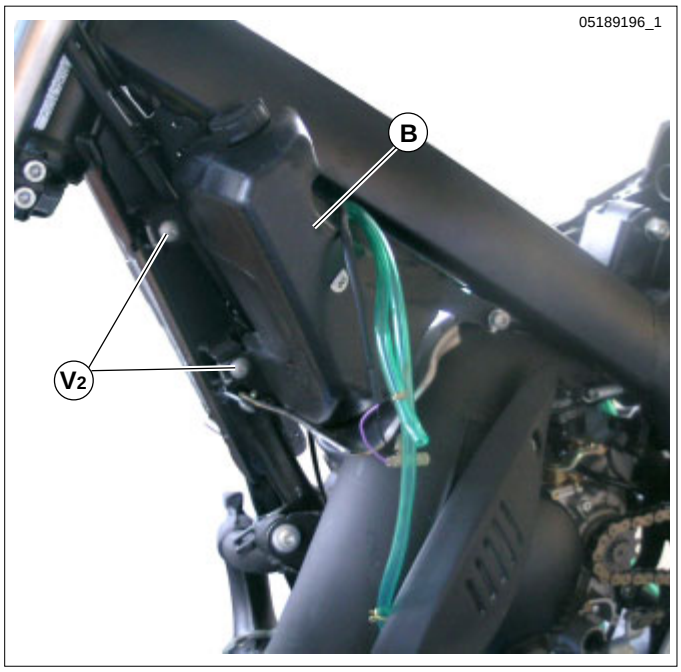
Whenever the oil circuit is disconnected (removing the oil tank, disconnection or replacement of a tube, dismantling the engine), it is necessary to BLEED off the air from the oil pump. See at the end of this chapter.

- Remove the grill (A), as explained in the paragraph “Radiator”.



- Undo the screws (V2) and disengage the tank (B), but without removing it from the scooter.

Recover the bushes located under the screws (V2).

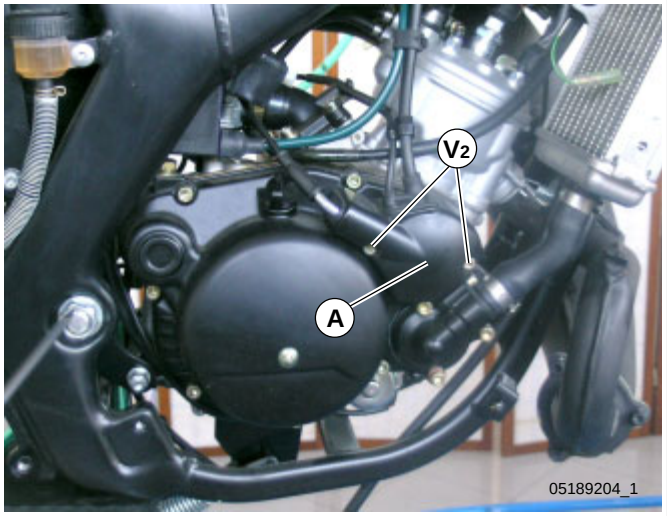


- Using a screwdriver , raise the sensor (C), pull it out of the tank (B) and disconnect its connector (D).
- Pull out the oil suction hose; then remove the oil tank.

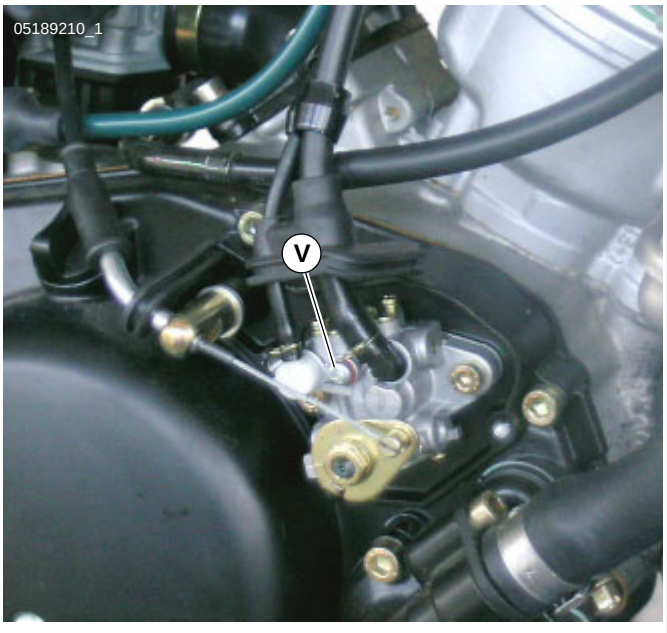
OIL PUMP BLEED

This operation should be done whenever the oil circuit is disconnected. (removing the oil tank, disconnection or replacement of a tube, dismantling the engine).

- Undo screws (V2) and remove cover (A).



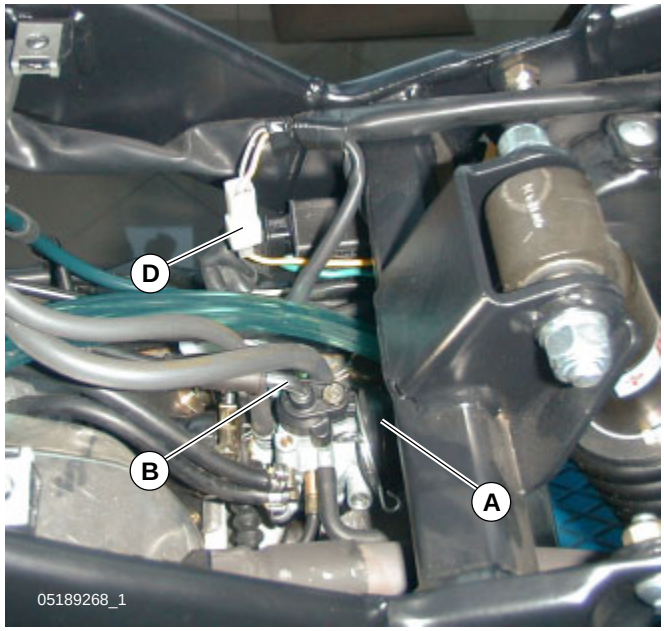
- Loosen the screw (V) and wait until air bubbles stop, then tighten the screw.
- Start the engine for a few moments accelerating it a little a few times, the stop it.
- Loosen the screw (V) again and make sure that air bubbles no longer come out; then tighten it and replace the cover (A).



ENGINE

- (Remove the radiator).
- (Remove the chain).
- (Remove the footrest assembly – brake pedal).
- (Remove silencer).

- Disconnect the carburettor hose (A), the transmission (B) of the accelerator, the fuel feed tube (C) and the connector (D)

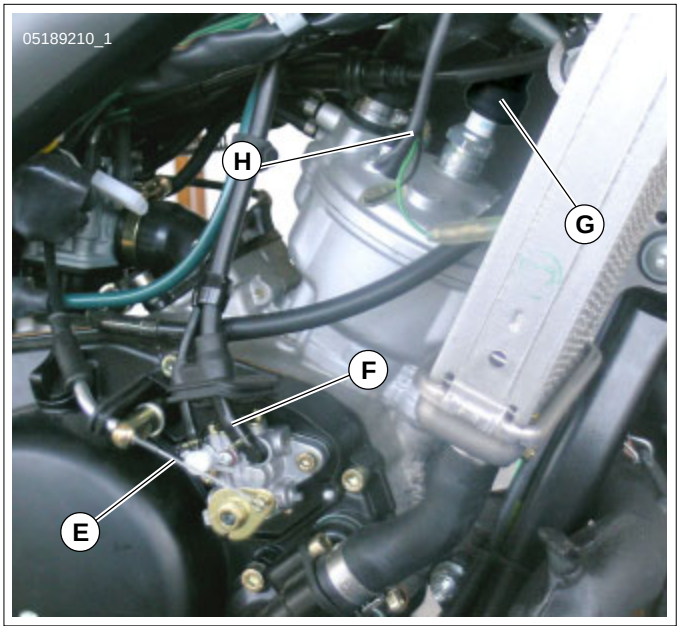


- After removing the cover disconnect the transmission (E) of the mixer and the oil feed tube (F).

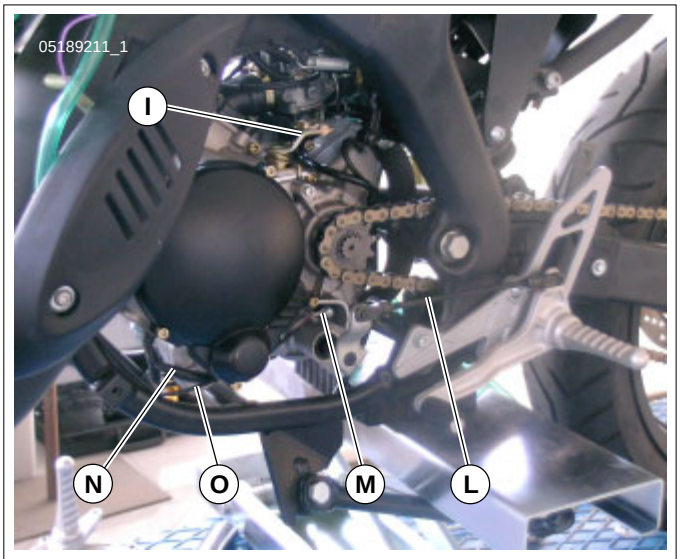
Whenever the oil circuit is disconnected (removing the oil tank, disconnection or replacement of a tube, dismantling the engine), it is necessary to BLEED off the air from the oil pump. See chapter "Oil tank".

NOTE To avoid oil leaks, plug the tube (F).

- Pull out the cap (G) of the spark and the connector (H) of the temperature sensor.



- Disconnect the transmission (I) of the clutch and the tension rod (L) of the gear pedal.
- Remove the neutral gear sensor (M), disconnect the starter cables (N) of the scooter and the flywheel cables (O).



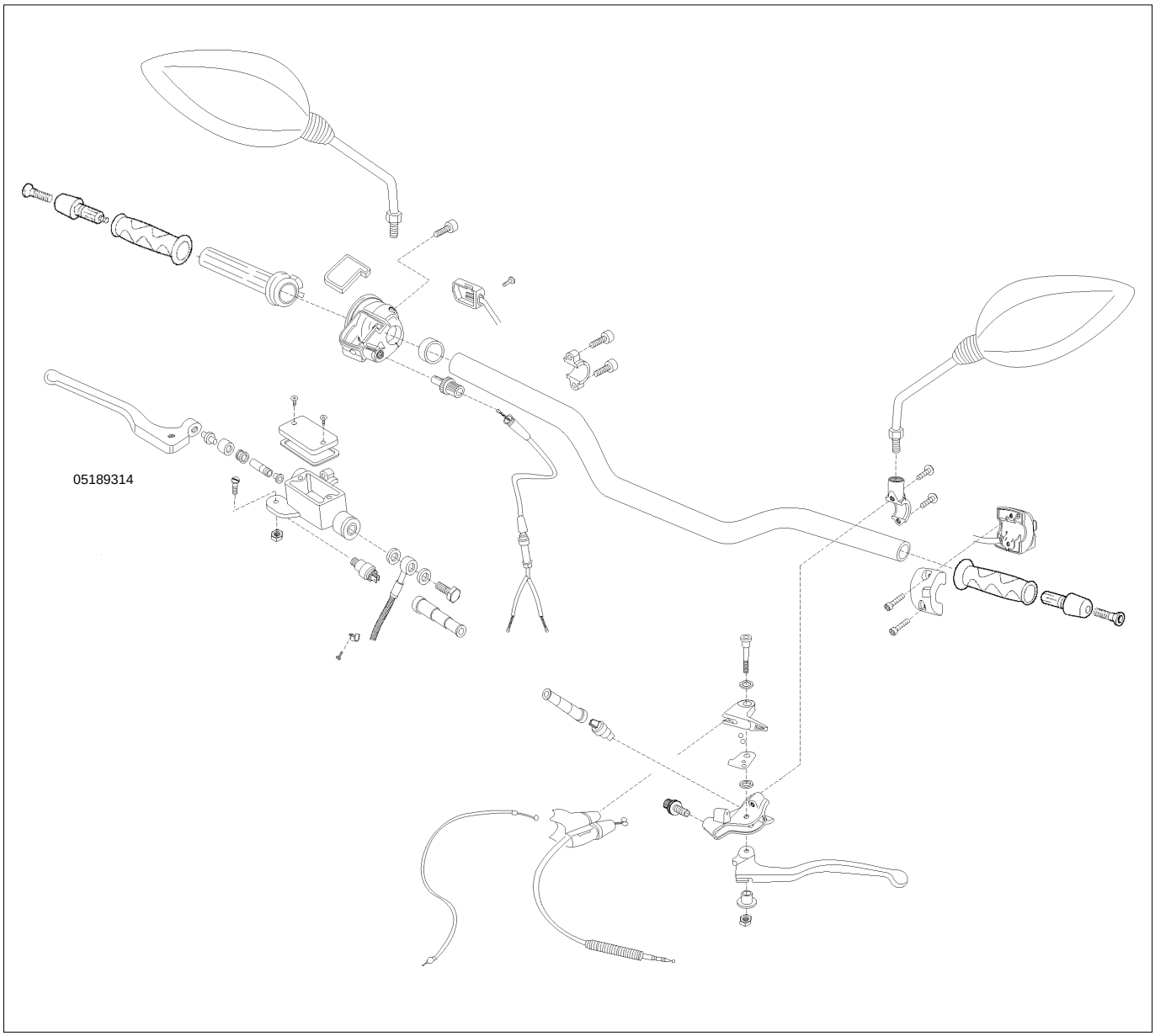
- Undo screws (V3) and remove engine, pulling it towards the right.

	Cs-N*m
V3	23 ± 10%

CONTROLS ON THE HANDLEBAR

To dismantle the controls, follow the figure shown below.

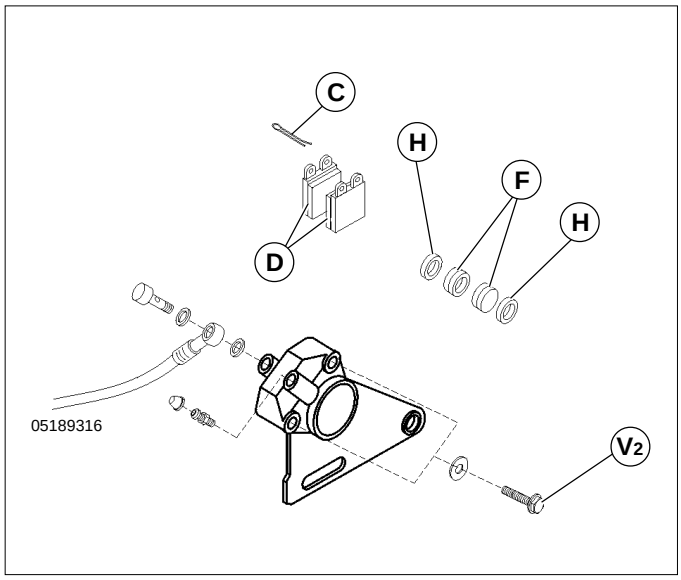
For greater detail, refer to Table F of the Spare Parts Catalogue.



BRAKE CALIPERS OVERHAUL

OVERHAUL OF REAR CALIPER

- Remove split pin (C).
- Remove the two brake pads (D).
- Apply a low pressure jet of compressed air to the hole in which the brake fluid union was fitted in order to cause the two plungers to be ejected from their seats in the two halves of the caliper; now undo and remove screws (V2).
- Separate the two caliper halves, ensuring that the two plungers (F) do not fall.
- Remove the oil seals (H) in both caliper halves, making sure not to damage their seatings.
- Check that the plungers and their seats are undamaged.



Always use new oil seals. Reassembly the plungers lubricating them with the appropriate grease.

NOTE ***After working on the braking system, always check that:***

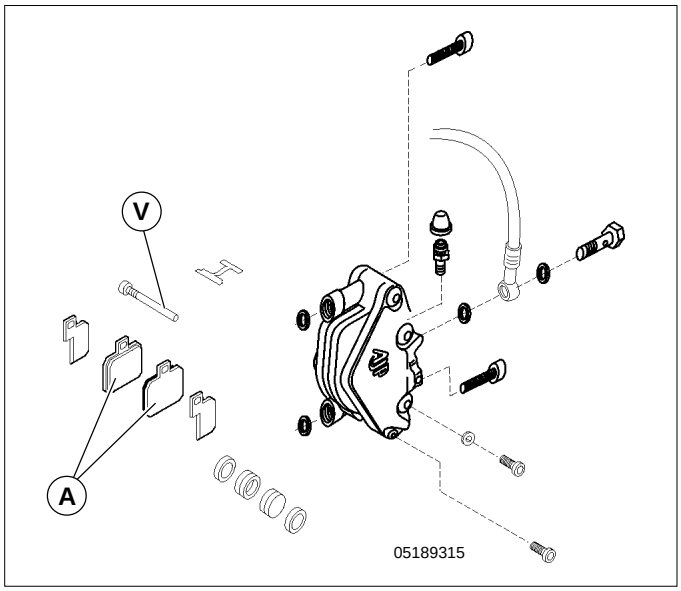
- ***the brake fluid lines are not damaged, crushed, or twisted;***
- ***the disc and pads are not contaminated with oil or grease;***
- ***all screws and unions are fully tightened;***
- ***there are no leaks from any of the unions.***

OVERHAUL OF FRONT CALIPER

Unscrew the spindle (V) from its housing and remove the two break pads (A).

V	Cs-N*m
	20 ± 20%

NOTE ***The brake pads can be removed and changed without having to disassemble the brake calipers from the scooter.***



- Undo screws (V2a).
- Undo screws (V2b).
- Apply a low pressure jet of compressed air to the oil-way in which the brake fluid union was fitted in order to cause the two plungers to be ejected from the brake caliper body.

Excessive air pressure will result in excessively violent ejection of the two plungers (A).

- Remove both plungers (A) and the oil seals (B).

During this procedure take care not to damage the wiper seal and oil seal grooves.

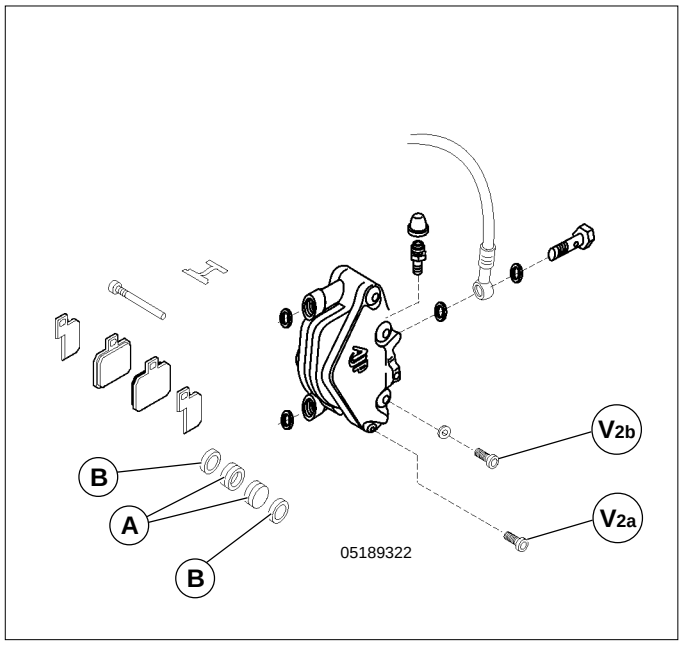
- Check the pistons and their cylinders for any signs of scoring.
- Clean the parts thoroughly and flush with exclusively alcohol.

Always use new oil seals. Remount the plungers lubricating them with the appropriate grease.

After terminating the inspection, cleaning and replacement procedures, refit all the parts in reverse sequence with respect to the sequence of disassembly.

NOTE ***After working on the braking system, always check that:***

- ***the brake fluid lines are not damaged, crushed, or twisted;***
- ***the discs and pads are not contaminated with oil or grease;***
- ***all screws and unions are fully tightened;***
- ***there are no leaks from any of the unions.***



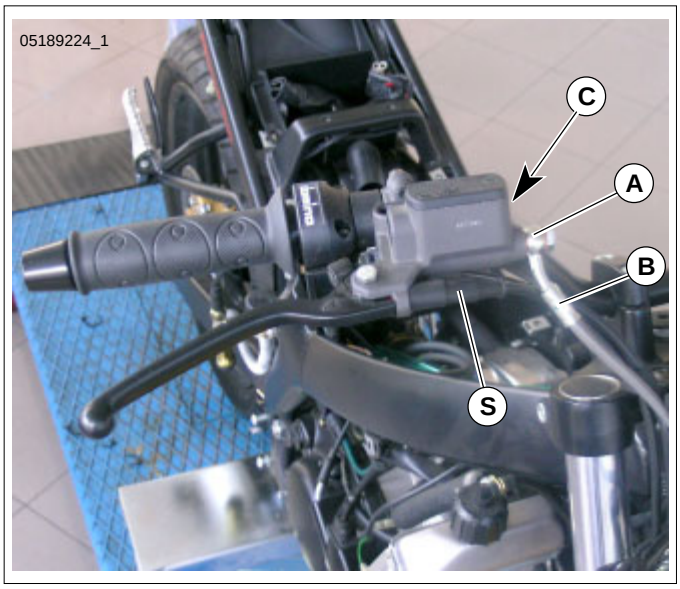
BRAKE MASTER CYLINDERS

FRONT BRAKE PUMP

Empty the hydraulic circuit and drain the fluid into a container so that it may be disposed of in compliance with statutory environmental and waste disposal legislation.

Beware of possible spills and splashes of brake fluid as it is highly corrosive and can cause personal injury and damage to painted parts of the scooter.

- Unscrew and remove union (A).
- Remove brake fluid line (B) and gaskets (C).
- Disconnect brake light switch (S).



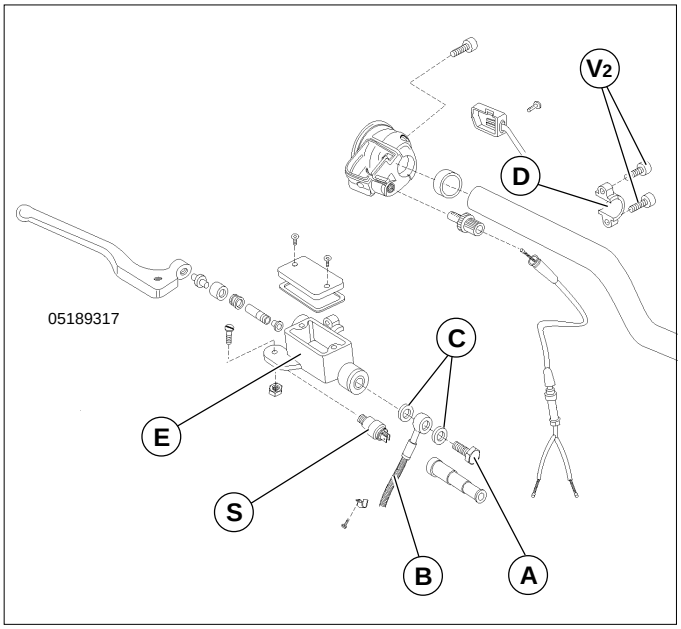
- Undo screws (V2) and remove U clamp (D).
- Remove master cylinder unit (E).
- To refit the master cylinder first start the lower screw (using a long “T” handle wrench) without tightening it and then start the upper screw, then tighten both screws to the prescribed torque.

After assembling the brake master cylinders, install the tube (B), interposing two new gaskets (C) and tighten the union (A) to the prescribed torque.

	Cs-N*m
A	20 ± 10%

	Cs-N*m
V2	28 ± 15%

***NOTE** Always fill the brake circuit with new brake fluid after refitting a master cylinder.*

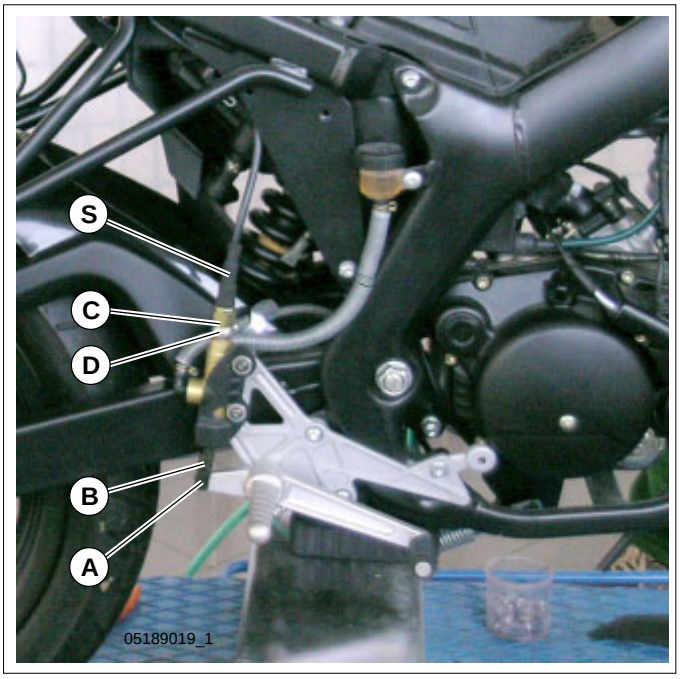


REAR BRAKE MASTER CYLINDER

- (Remove the sub-panel).
- (Remove the left number plate holder).
- Disengage the spring (A) and remove it.
- Pull out the entire tension rod (B), downwards.

NOTE ***The STOP switch is incorporated into the fitting (C).***

- Unscrew and remove union (C).
- Remove brake fluid line (D) and gaskets (E).
- Pull out the Faston connectors (S).



- Undo screws (V2) and remove the pump (F).

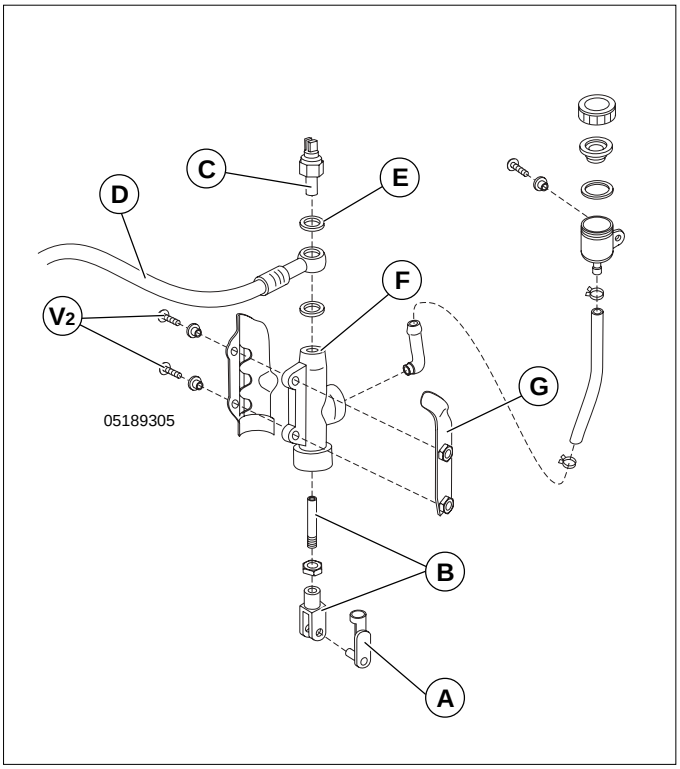
The screws (V2) are screwed onto the footrest (G); make sure it does not fall.

After assembling the brake master cylinders, install the tube (D), interposing two new gaskets (E) and tighten the union (C) to the prescribed torque.

A	Cs-N*m
	20 ± 10%

V2	Cs-N*m
	28 ± 15%

NOTE ***Always fill the brake circuit with new brake fluid after refitting a master cylinder.***

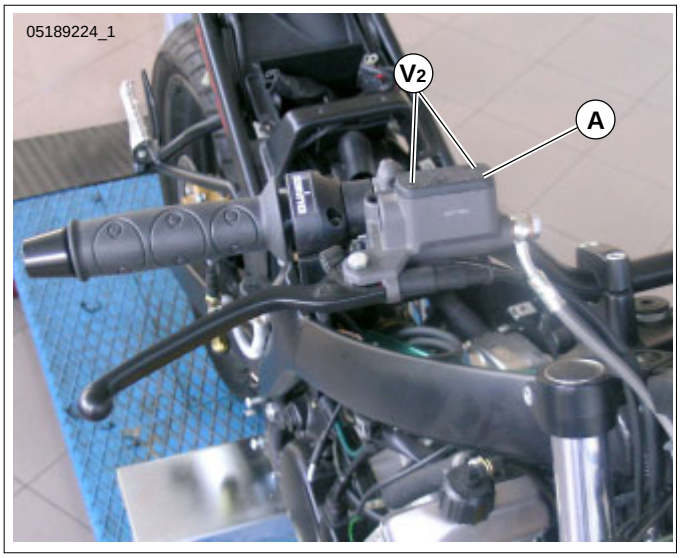


BLEEDING THE BRAKE SYSTEM

FRONT BRAKE CALIPER

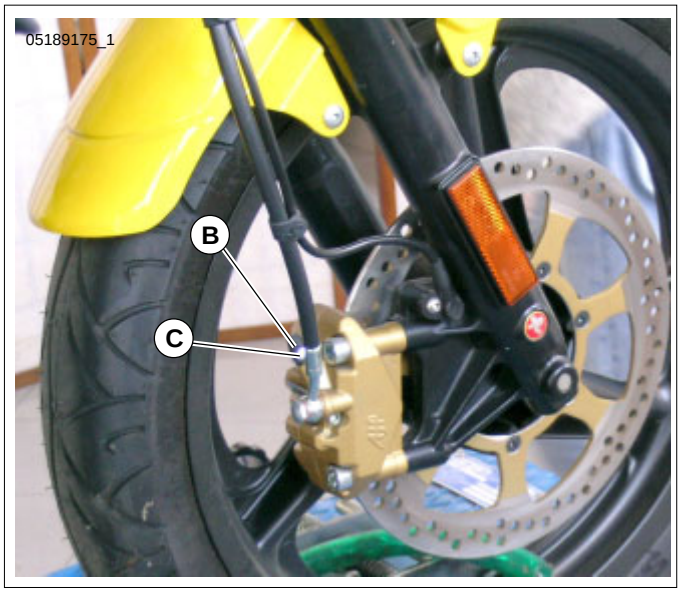
NOTE ***Position the scooter so that it is stable and perfectly level.***

- Remove master cylinder reservoir cover (A), unscrewing the screws (V2), so that you can top up the brake fluid.
- Fill the brake fluid reservoir to the max. level.



- Remove rubber cap (B) from bleed screw (C) and fit a rubber tube to recover escaping brake fluid.
- Pull the right-hand brake lever to pressurise the brake circuit.
- Keeping the lever pulled, loosen the bleed screw to allow any air in the circuit to escape. Now tighten bleed screw (C).

C	Cs-N*m
	12 ± 16%



- Repeat this procedure until brake fluid only flows out of the rubber tube.
- Replenish the brake fluid level in the reservoir.

While bleeding the brakes ensure that no brake fluid comes into contact with the scooter bodywork (risk of damage). In addition, while bleeding the brake calipers avoid contamination of brake discs or pads with brake fluid. Failure to comply with this prescription will have a negative effect on the efficiency of the brake system.

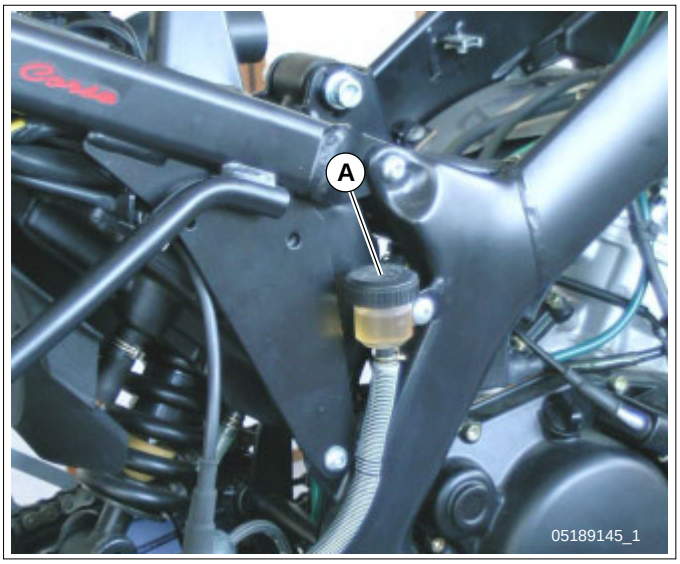
If the escaping brake fluid continues to contain air bubbles during the bleed operation, check all unions carefully: if the unions are perfectly tight, check the gaskets on the master cylinder and the caliper plungers for the possible ingress of air.

When performing the bleed operation brake fluid may leak from the bleed screw and contaminate the caliper or the disc: in this case, dry the caliper thoroughly and degrease the disc.

REAR BRAKE CALIPER

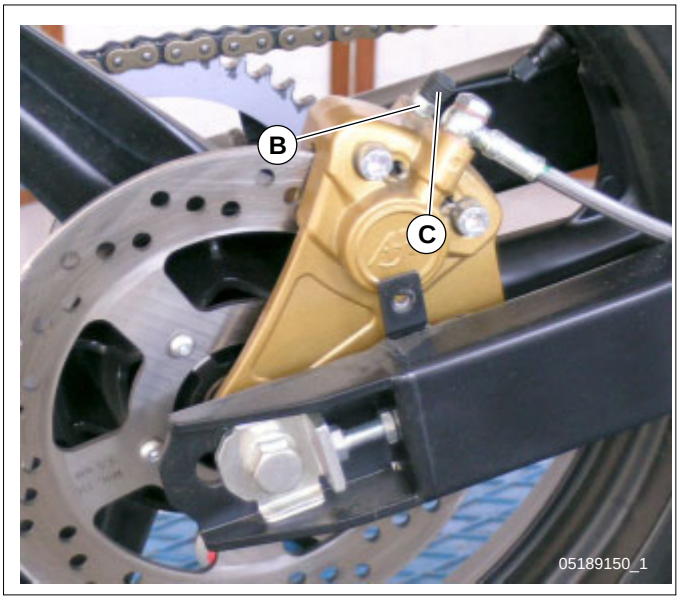
NOTE** **Position the scooter so that it is stable and perfectly level.

- Remove the master cylinder oil reservoir cover (A) so that you can top up.
- Fill the brake fluid reservoir to the max. level.



- Remove rubber cap (B) from bleed screw (C) and fit a rubber tube to recover escaping brake fluid.
- Pull the right-hand brake lever to pressurise the brake circuit.
- Keeping the lever pulled, loosen the bleed screw to allow any air in the circuit to escape. Then tighten bleed screw (C).

C	Cs-N*m
	12 ± 16%



- Repeat this procedure until brake fluid only flows out of the rubber tube.
- Replenish the brake fluid level in the reservoir.

While bleeding the brakes ensure that no brake fluid comes into contact with the scooter bodywork (risk of damage). In addition, while bleeding the brake calipers avoid contamination of brake discs or pads with brake fluid. Failure to comply with this prescription will have a negative effect on the efficiency of the brake system.

If the escaping brake fluid continues to contain air bubbles during the bleed operation, check all unions carefully: if the unions are perfectly tight, check the gaskets on the master cylinder and the caliper plungers for the possible ingress of air.

When performing the bleed operation brake fluid may leak from the bleed screw and contaminate the caliper or the disc: in this case, dry the caliper thoroughly and degrease the disc.